

FINAL REPORT NUMBER 201U-MGA-03-006

SAFETY COMPLIANCE TESTING FOR FMVSS 201U
Occupant Protection In Interior Impact
Upper Interior Head Impact Protection

Mitsubishi Motors Corporation
2003 Mitsubishi Montero Sport ES MPV
NHTSA No. C35601

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083



Test Dates: April 9-10, 2003
Report Date: April 11, 2003

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
OFFICE OF VEHICLE SAFETY COMPLIANCE
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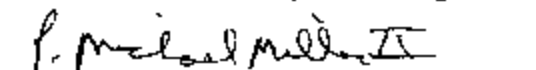
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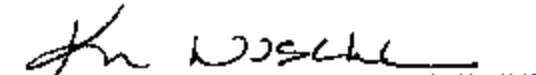


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16. Abstract A compliance test was conducted on the subject 2003 Mitsubishi Montero Sport ES MPV, NHTSA No. C35601, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201U compliance. The test was conducted at the MGA Research Corporation in Troy, Michigan on April 9-10, 2003. Test failures identified were as follows: NONE The data recorded seems to indicate that the 2003 Mitsubishi Montero Sport ES MPV tested appears to comply with the requirements for FMVSS 201U which were set forth by the National Highway Traffic Safety Administration.			
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TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE NO.</u>
1.0	PURPOSE OF COMPLIANCE TEST	1-1
2.0	COMPLIANCE DATA SUMMARY	2-1
3.0	TEST DATA (Including Acceleration and Velocity Plots)	3-1
4.0	TEST EQUIPMENT LIST AND CALIBRATION INFORMATION	4-1
5.0	PHOTOGRAPHS	5-1
APPENDIX A	TEMPERATURE TRACE	A-1

LIST OF TABLES

<u>TABLE</u>	<u>DESCRIPTION</u>	<u>PAGE NO</u>
2-1	SUMMARY TABLE OF TEST RESULTS	2-2
2-2	GENERAL TEST AND VEHICLE PARAMETER DATA	2-4
2-3	HORIZONTAL IMPACT ANGLE RANGE FOR A- AND B-PILLARS	2-8
2-4	VERTICAL IMPACT ANGLE RANGES	2-9
2-5	TARGET MEASUREMENTS	2-10
2-6	SUMMARY OF TARGETING RESULTS	2-13
4-1	LIST OF ITEMS USED	4-1
4-2	FMH CALIBRATION SUMMARY	4-2

1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2003 Mitsubishi Montero Sport ES MPV, meets the performance requirements of FMVSS 201U, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted during April 9-10, 2003 on a 2003 Mitsubishi Montero Sport ES MPV, manufactured by Mitsubishi Motors Corporation.

All tests were conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-201U-01 dated April 3, 1998 and the corresponding MGA Research Corporation's FMVSS 201U procedure number MGATP201U_FRAME#2 dated March 20, 2003.

All tests were conducted at MGA Research Corporation in Troy, Michigan and were performed by MGA engineers and technicians. The FMVSS 201U impactor test machine was used to conduct the testing. Target locations were determined by using a Coordinate Measurement Machine in conjunction with the MGA EZ-Target™ program and MGA procedure MGATP201U_Test Series dated March 20, 2003.

2.0 COMPLIANCE TEST DATA SUMMARY

The 2003 Mitsubishi Montero Sport ES MPV was equipped with A, B, C, and D-Pillars, an adjustable seat belt anchorage on each B-Pillar, a fixed seat belt anchorage on each C-Pillar, an assist handle on each A-Pillar and on the side rail rearward of the B-Pillar, a grab handle above each rear door and above the front passenger door, a front overhead storage console, a coat hook above each rear door, and middle and rear headliner light consoles.

Upon completion of targeting the test vehicle, ten (10) targets were chosen to be impacted based upon engineering judgement and certification test data provided by Mitsubishi Motors of America, Inc. Targets were chosen which appeared most likely to give high HIC(d) values. The ten (10) targets chosen were:

AP1	BP1	SR2A	UR5
AP2	BP2	SR3-5	
AP3	OP1	UR1	

The 2003 Mitsubishi Montero Sport ES MPV tested appears to comply with the performance criteria for FMVSS 201U. The HIC(d) measured using the Part 572L (Free Motion Headform) was below 1000 for each tested component.

TABLE 2-1
SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES 4WD SUV

VEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: Black

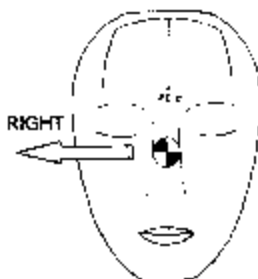
VEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Right	116	22	23.9	496	436	20	0
AP2	Left	200	14	23.7	464	395	3	3 Left
AP3	Right	160	43	23.6	500	442	9	2 Left
BP1	Left	270	10	23.4	467	399	39	5 Left
BP2	Right	90	11	23.9	582	552	2	2 Left
OP1	Right	90	7	23.9	416	331	17	2 Right
SR2A	Right	90	39	23.4	738	757	3	1 Left
SR3-5	Right	90	28	23.7	442	365	1	2 Left
UR1	Left	270	37	23.8	556	516	49	8 Right
UR5	Right	90	28	23.8	525	475	48	12 Left

Above and left/right refers to the position relative to reference pt. 0 where the target made contact with the Free Motion Headform. See the diagram below for details.



POST TEST COMMENTS:

The following description lists any post-test damage or other test observations for each target.

AP3 Right: The grab handle was bent during testing.

BP2 Right: The D-ring was compressed.

SR2A Right: The side rail was compressed.

SR3-5 Right: Slight headliner deformation.

UR5 Right: Slight headliner deformation.

No damage was observed for any other targets.

REMARKS:

The targets listed were impacted in the following order:

Right: AP3, AP1, BP2, UR5, SR2A, OP1, SR3-5

Left: UR1, BP1, AP2

The 150 mm rule was observed for targets horizontal to each other and the 200 mm rule was observed for vertical components.

Targets were determined using 1 inch decals. All impacts and angle determinations were performed using ½ inch decals.

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-2
GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES MPV

VEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: Black

VEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

INTERIOR TRIM INFORMATION: A, B, C, and D-Pillars, an adjustable seat belt anchorage on each B-Pillar, a fixed seat belt anchorage on each C-Pillar, an assist handle on each A-Pillar and on the side rail rearward of the B-Pillar, a grab handle above each rear door and above the front passenger door, a front overhead storage console, a coat hook above each rear door, and middle and rear headliner light consoles.

SUNROOF INFORMATION:

Installed: Yes X No
Operation: Electric Manual

ROLL-BAR INFORMATION:

Installed: Yes X No
Padded: Yes X No
Braces: Yes X No

GENERAL INFORMATION:

Date Received: 4/5/03; Odometer Reading: 18 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Mitsubishi Motors Corporation

Date of Manufacture: 09/02 VIN: JA4MT21H33J020485

GVWR: 2430 kg;GAWR FRONT: 1200 kgGAWR REAR: 1496 kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 180 kpa REAR: 220 kpaRecommended Tire Size: P235/75R15

Recommended Cold Tire Pressure:

FRONT: 180 kpa REAR: 180 kpaSize of Tire on Test Vehicle: P235/75R15Type of Spare Tire: P235/75R15; Space Saver: ; Standard: X

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench ; Bucket X; Split Bench Number of Occupants: Front 2; Rear 3; TOTAL 5VEHICLE CAPACITY WEIGHT (VCW) = 476 kgNo. of Occupants x 68 kg = 340 kgRated Cargo/Luggage Weight (RCLW) = 136 kg (difference)

WEIGHT OF TEST VEHICLE AS DELIVERED AT LABORATORY: (with maximum fluids)

Right Front = 495.0 kg Right Rear = 408.0 kgLeft Front = 518.0 kg Left Rear = 428.0 kgTOTAL FRONT = 1013.0 kg TOTAL REAR = 836.0 kg% Total Weight = 54.8 % % Total Weight = 45.2 %TOTAL DELIVERED WEIGHT = 1849.0 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1849.0 kgRated Cargo/Luggage Wt. = 136.0 kgTARGET TEST WEIGHT 1985.0 kg

WEIGHT OF TEST VEHICLE:

Right Front =	<u>488.0</u> kg	Right Rear =	<u>484.5</u> kg
Left Front =	<u>506.5</u> g	Left Rear =	<u>506.5</u> kg
TOTAL FRONT =	<u>992.5</u> kg	TOTAL REAR =	<u>991.0</u> kg
% Total Weight =	<u>50.0</u> %	% Total Weight =	<u>50.0</u> %
TOTAL TEST WEIGHT = <u>1983.5</u> kg			
Weight of ballast secured in vehicle's cargo area = <u>134.5</u> kg			

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 890 mm; Left Front 894 mm;
 Right Rear 892 mm; Left Rear 895 mm;
 Pitch Angle at Right Door Sill = 0.6° rear higher
 Pitch Angle at Left Door Sill = 0.6° rear higher
 Roll Angle at Front Bumper = 0.2° right higher
 Roll Angle at Rear Bumper = 0.5° right higher

FULLY LOADED: Right Front 891 mm; Left Front 894 mm;
 Right Rear 861 mm; Left Rear 857 mm;
 Pitch Angle at Right Door Sill = 0.1° front higher
 Pitch Angle at Left Door Sill = 0.2° front higher
 Roll Angle at Front Bumper = 0.1° right higher
 Roll Angle at Rear Bumper = 0.4° right higher

AS TARGETED:

Pitch Angle at Right Door Sill = 0.2° rear higher
 Pitch Angle at Left Door Sill = 0.2° rear higher
 Roll Angle at Front Bumper = 0.1° right higher
 Roll Angle at Rear Bumper = 0.5° right higher

AS TESTED (Targets Impacted on Right Side):

Pitch Angle at Right Door Sill = 0.2° rear higher
Pitch Angle at Left Door Sill = 0.2° rear higher
Roll Angle at Front Bumper = 0.1° right higher
Roll Angle at Rear Bumper = 0.5° right higher

AS TESTED (Targets Impacted on Left Side):

Pitch Angle at Right Door Sill = 0.2° rear higher
Pitch Angle at Left Door Sill = 0.2° rear higher
Roll Angle at Front Bumper = 0.1° right higher
Roll Angle at Rear Bumper = 0.5° right higher

VEHICLE WHEELBASE = 2715 mm

REMARKS: The seat travel distance was measured to be 250 mm for both front driver seats and front passenger seats.

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-3
HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES MPV
 VEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: Black
 VEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003
 TEST LABORATORY: MGA Research Corporation
 OBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195°-255°	L 199.5°	L 244.2°
	R 105°-165°	R 115.5°	R 161.2°
B-PILLAR	L 195°-345°	L 197.5°	L 281.8°
	R 15°-165°	R 78.2°	R 163.1°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES MPVVEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: BlackVEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	FH2	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
SIDE RAIL	SR1	L 0°-50°	L 0°	L 21°
		R 0°-50°	R 0°	R 25°
	SR2A	L 0°-50°	L 0°	L 22°
		R 0°-50°	R 0°	R 39°
	SR2B	L 0°-50°	L 0°	L 22°
		R 0°-50°	R 0°	R 39°
	SR3-1	L 0°-50°	L 0°	L 9°
		R 0°-50°	R 0°	R 12°
	SR3-2	L 0°-50°	L 0°	L 9°
		R 0°-50°	R 0°	R 11°
	SR3-3	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR3-4	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR3-5	L 0°-50°	L 0°	L 26°
		R 0°-50°	R 0°	R 28°

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
A-PILLAR	AP1	L -5°-50°	L -5°	L 17°
		R -5°-50°	R -5°	R 22°
	AP2	L -5°-50°	L -5°	L 14°
		R -5°-50°	R -5°	R 23°
	AP3	L -5°-50°	L -5°	L 43°
		R -5°-50°	R -5°	R 43°
B-PILLAR	BP1	L -10°-50°	L -10°	L 10°
		R -10°-50°	R -10°	R 11°
	BP2*	L 0°-50°	L 0°	L 10°
		R 0°-50°	R 0°	R 11°
	BP3	L -10°-50°	L -10°	L 0°
		R -10°-50°	R -10°	R 0°
	BP4	L -10°-50°	L -10°	L -9°
		R -10°-50°	R -10°	R -9°
OTHER PILLAR	OP1*	L 0°-50°	L 0°	L 8°
		R 0°-50°	R 0°	R 7°
	OP2	L -10°-50°	L -10°	L 5°
		R -10°-50°	R -10°	R 7°
UPPER ROOF 1		0°-50°	0°	37°
UPPER ROOF 2		0°-50°	0°	32°
UPPER ROOF 3		0°-50°	0°	24°
UPPER ROOF 4		0°-50°	0°	23°
UPPER ROOF 5		0°-50°	0°	28°
UPPER ROOF 6		0°-50°	0°	24°

As determined using the Procedures specified in S8.13.4.2. Targets BP2* and OP1* are seat belt anchor points.

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-5
TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES MPV

VEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: Black

VEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	250 mm	250 mm
T°	Horizontal ∠ {CG-F1 (Left Seat) to (Right A-Pillar)}	115.8°	--
A1°	360° - T°	244.2°	--
W°	Horizontal ∠ {CG-2 (Left Seat) to (Left A-Pillar)}	199.5°	--
A2°	A2° = W°	199.5°	--
U°	Horizontal ∠ {CG-2 (Left Seat) to (Left B-Pillar)}	281.8°	--
B1°	B1° = U°	281.8°	--
V°	Horizontal ∠ {CG-R (Left Seat) to (Left B-Pillar)}	197.5°	--
B2°	B2° = V°	197.5°	--
W° (right)	Horizontal ∠ {CG-F2 (Right Seat) to (Right A-Pillar)}	--	161.2°
A1° (right)	A1° (right) = W° (right)	--	161.2°
T° (right)	Horizontal ∠ {CG-F1 (Right Seat) to (Left A-Pillar)}	--	244.5°
A2° (right)	360° - T° (right)	--	115.5°
V° (right)	Horizontal ∠ {CG-R (Right Seat) to (Right B-Pillar)}	--	163.1°
B1° (right)	B1° (right) = V° (right)	--	163.1°
U° (right)	Horizontal ∠ {CG-F2 (Right Seat) to (Right B-Pillar)}	--	78.2°
B2° (right)	B2° (right) = U° (right)	--	78.2°
J	A-Pillar {(Plane 3) - (Plane 5)}	343.3 mm	335.5 mm
J/2	J + 2	171.7 mm	167.8 mm
D1	Upper Roof {(Plane A) - (Plane B)}	2445.0 mm	
D1/2	D1 + 2	1222.5 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1187.8 mm	

Measurement	Description	Left Side	Right Side
D2/2	D2 + 2	593.9 mm	
.35D1	.35 x D1	855.8 mm	
.35D2	.35 x D2	415.7 mm	
N	B-Pillar {(BPR) - (lowest point on daylight opening forward of B-Pillar)}	453.0 mm	449.2 mm
N/2	B-Pillar {(BP3) - (lowest point on daylight opening forward of B-Pillar)}	226.5 mm	224.6 mm
N/4	B-Pillar {(BP4) - (lowest point on daylight opening forward of B-Pillar)}	113.3 mm	112.3 mm
Q	O-Pillar {(OPR) - (lowest point on daylight opening)}	444.8 mm	442.2 mm
Q/2	Q + 2	222.4 mm	221.1 mm
D	R-Pillar (Point 7 - Point M)	950 mm	950 mm
3D/7	(3 * D) + 7	407 mm	407 mm

As determined using the Procedures specified in S10.1-10.13.

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1430.0	-350.0	245.0	1430.0	350.0	245.0
Rear Row	2230.0	-350.0	295.0	2230.0	350.0	295.0

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1948.4	-349.7	728.0	1948.8	350.9	729.6
Rear Row	2748.0	-350.1	781.2	2748.4	350.5	782.9

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	1858.4	-349.7	1388.0	1858.8	350.9	1389.6
CGF2	2108.4	-349.7	1388.0	2108.8	350.9	1389.6
CGR	2908.0	-350.1	1441.2	2908.4	350.5	1442.9

REFERENCE FOR VEHICLE COORDINATE SYSTEM:

Driver door front upper striker bolt, upper hole (x, y, z) = (1524.4, -748.1, 357.2)

REMARKS:

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto

TABLE 2-6
SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Mitsubishi Montero Sport ES MPV

VEH. NHTSA NO.: C35601 VIN: JA4MT21H33J020485 COLOR: Black

VEH. BUILD DATE: September, 2002 TEST DATES: April 9-10, 2003

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Scott Kreiger, Louis Campbell

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
A-Pillar Left Side								
AP1	1088.1	-519.4	1019.9			Yes		
REL	1111.8	-519.8	1015.8	244	17		2	No
AP2	1031.1	-546.0	931.6			Yes		
REL	1027.7	-552.7	899.3	200	14		1	Yes
AP3	967.8	-565.1	849.7	200	43	No		No
A-Pillar Right Side								
AP1	1065.8	516.5	1017.2			Yes		
REL	1112.3	518.0	1020.1	116	22		2	Yes
AP2	1031.2	543.1	928.6			Yes		
REL	1022.4	544.4	901.1	161	23		1	No
AP3	965.5	562.1	850.2	180	43	No		Yes
B-Pillar Left Side								
BP1	1577.6	-488.8	1084.0	270	10	No		Yes
BP2	1584.2	-581.0	852.7	270	10	No		No
BP3	1538.7	-612.9	858.4	270	0	No		No
BP4	1640.7	-666.8	745.0	210	-9	No		No
B-Pillar Right Side								
BP1	1577.3	489.4	1081.7	90	11	No		No
BP2	1584.2	578.6	858.0	90	11	No		Yes
BP3	1535.0	611.0	857.1	90	0	No		No

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
BP4	1636.0	664.0	743.8	150	-8	No		No
Other Pillar Left Side								
OPR	2408.4	-480.3	1083.8					
OP1	2441.4	-576.1	893.0	270	8	No		No
OP2	2451.7	-600.8	861.2	270	5	No		No
Other Pillar Right Side								
OPR	2405.3	483.8	1087.6					
OP1	2442.3	587.6	888.2	90	7	No		Yes
OP2	2451.4	606.8	866.1	90	7	No		No
Rear Pillar Left Side								
RP1	3147.9	-499.4	1023.8	Exempt from testing				No
RP2	3192.3	-637.8	874.8	Exempt from testing				No
Rear Pillar Right Side								
RP1	3143.8	499.4	1029.1	Exempt from testing				No
RP2	3184.3	648.5	879.2	Exempt from testing				No
Front Header Left Side								
FH1	987.8	-404.3	1038.8	180	50	No		No
FH2	966.2	-259.2	1050.1	180	50	No		No
Front Header Right Side								
FH1	984.8	405.4	1038.1	180	50	No		No
FH2	963.7	258.6	1049.2	180	50	No		No
Side Rail Left Side								
SR1	1217.8	-503.6	1054.9	270	21	No		No
SR2(A)	1368.0	-500.6	1065.5	270	22	No		No
SR2(B)	1277.1	-503.5	1057.8	270	22	No		No
SR3-1	1668.0	-505.7	1038.5	270	9	No		No
SR3-2	1794.1	-504.4	1041.1	270	9	No		No
SR3-3	2068.4	-492.2	1046.4	270	35	No		No
SR3-4	2259.8	-490.1	1046.3	270	35	No		No
SR3-5	2558.2	-490.7	1059.7	270	26	No		No

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
Side Rail Right Side								
SR1	1216.6	487.2	1037.3	90	25	No		No
SR2(A)	1366.3	498.4	1063.3			Yes		
REL	1366.3	473.8	1059.8	90	39		1	Yes
SR2(B)	1277.7	501.0	1054.8			Yes		
REL	1275.2	475.4	1053.3	90	39		1	No
SR3-1	1661.4	503.7	1039.3	90	12	No		No
SR3-2	1791.8	501.7	1044.3	90	11	No		No
SR3-3	2059.7	501.2	1039.2	90	35	No		No
SR3-4	2256.3	497.4	1042.1	90	35	No		No
SR3-5	2556.0	502.2	1054.5	90	28	No		Yes
Rear Header Left Side								
RH	3212.3	-347.5	1049.5	Exempt from testing				No
Rear Header Right Side								
RH	3211.2	353.6	1052.9	Exempt from testing				No
Upper Roof Left Side								
UR1	1270.3	-407.7	1102.4	270	37	No		Yes
UR2	1573.5	-417.6	1119.3	270	32	No		No
UR3	2409.0	-412.9	1123.1	270	24	No		No
Upper Roof Right Side								
UR4	1272.4	414.4	1105.1	90	23	No		No
UR5	1574.9	417.4	1121.7	90	28	No		Yes
UR6	2408.4	414.9	1122.8	90	24	No		No

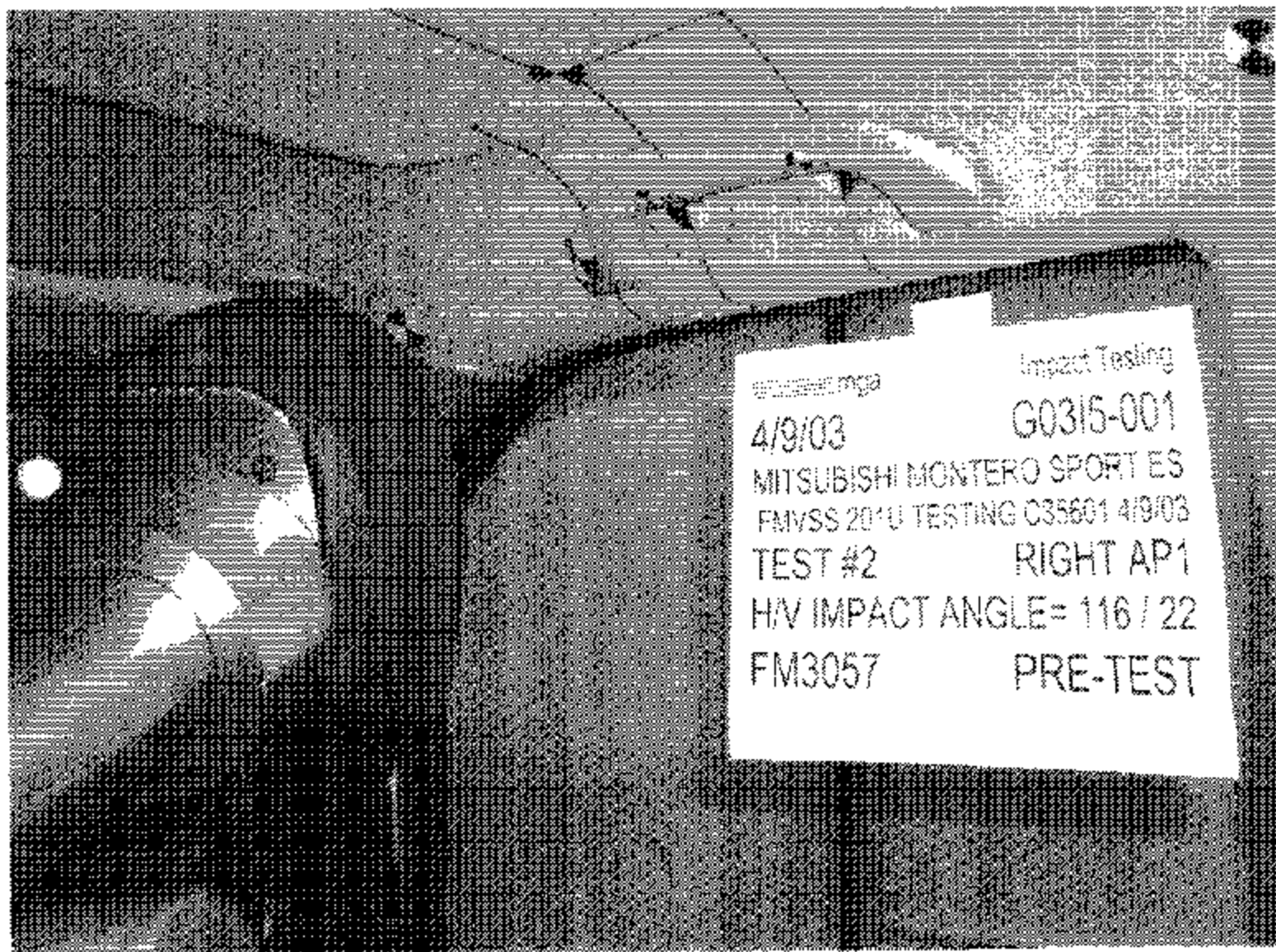
As determined using the Procedures specified in S10.1-10.13.

REMARKS: Targets RP1, RP2, and RH (right and left side) were found to be located greater than 600 mm rearward of the rear row SgRP's. These targets are therefore exempt from testing.

RECORDED BY: David G. Gotwals

DATE: April 9, 2003

APPROVED BY: Helen A. Kaleto



4/9/03

Impact Testing

4/9/03

G0315-001

MITSUBISHI MONTERO SPORT ES

FMVSS 201U TESTING C35601 4/9/03

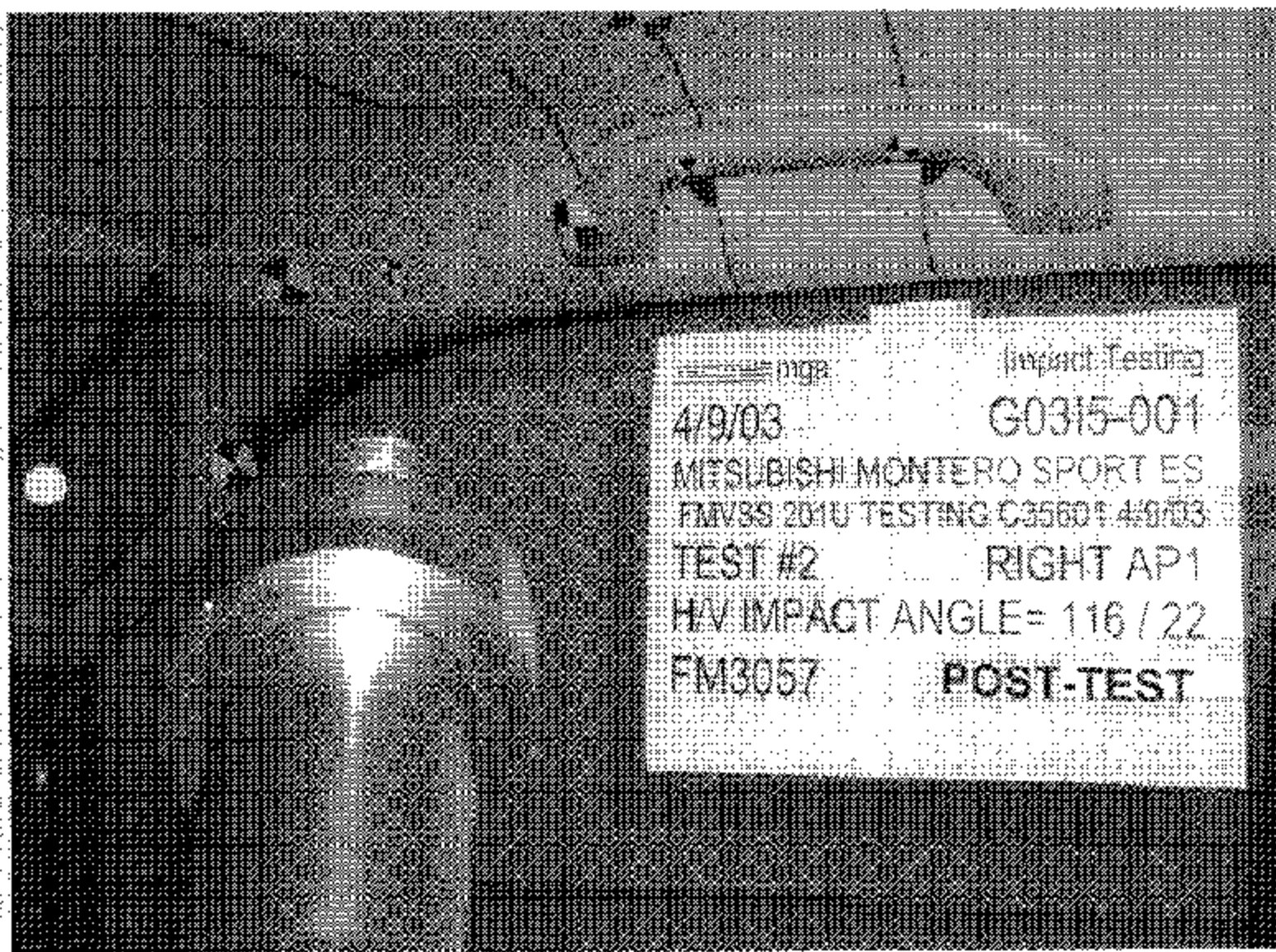
TEST #2

RIGHT AP1

H/V IMPACT ANGLE= 116 / 22

FM3057

PRE-TEST



mgp

Impact Testing

4/9/03

G0315-001

MITSUBISHI MONTERO SPORT ES

FMVSS 201U TESTING C35601 4/9/03

TEST #2

RIGHT AP1

HV IMPACT ANGLE= 116 / 22

FM3057

POST-TEST

mga

Impact Testing

4/9/03

G0315-001

MITSUBISHI MONTERO SPORT ES

FMVSS 201U TESTING C35601 4/9/03

TEST #2

RIGHT AP1

H/V IMPACT ANGLE= 116 / 22

FM3057

POST-TEST

MICHIGAN OPERATIONS
 DATE: 3/20/03
 SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
 REVISION NO. 5
 PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTENO SPORT

GENERAL TEST PARAMETERS:

Target (Vehicle Side): left API

MGA Test Reference No.: FM3057

Approach Angles: Horizontal 116°

Vertical 22°

Test Number: 2

Temperature: 23 °F (°C)

Humidity: 19 %

Time of Test: 3:00 am/pm

FMH Serial No. 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
496	436	11.1	23.9	20	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35523	-100.9	1.21	1.21
Y	6	J35516	100.7	1.23	1.23
Z	7	J35518	100.6	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen A. Kalata Date: 4/6/03

*Only necessary for NHTSA (Government) Compliance testing.

RESULTS OF HIC36 PROGRAM*****
The input file is \NHTSA\FM3057AV.A05

HIC = 436.32 calculated over 11.1 msec

.1 = 2.70 msec T2 = 13.80 msec

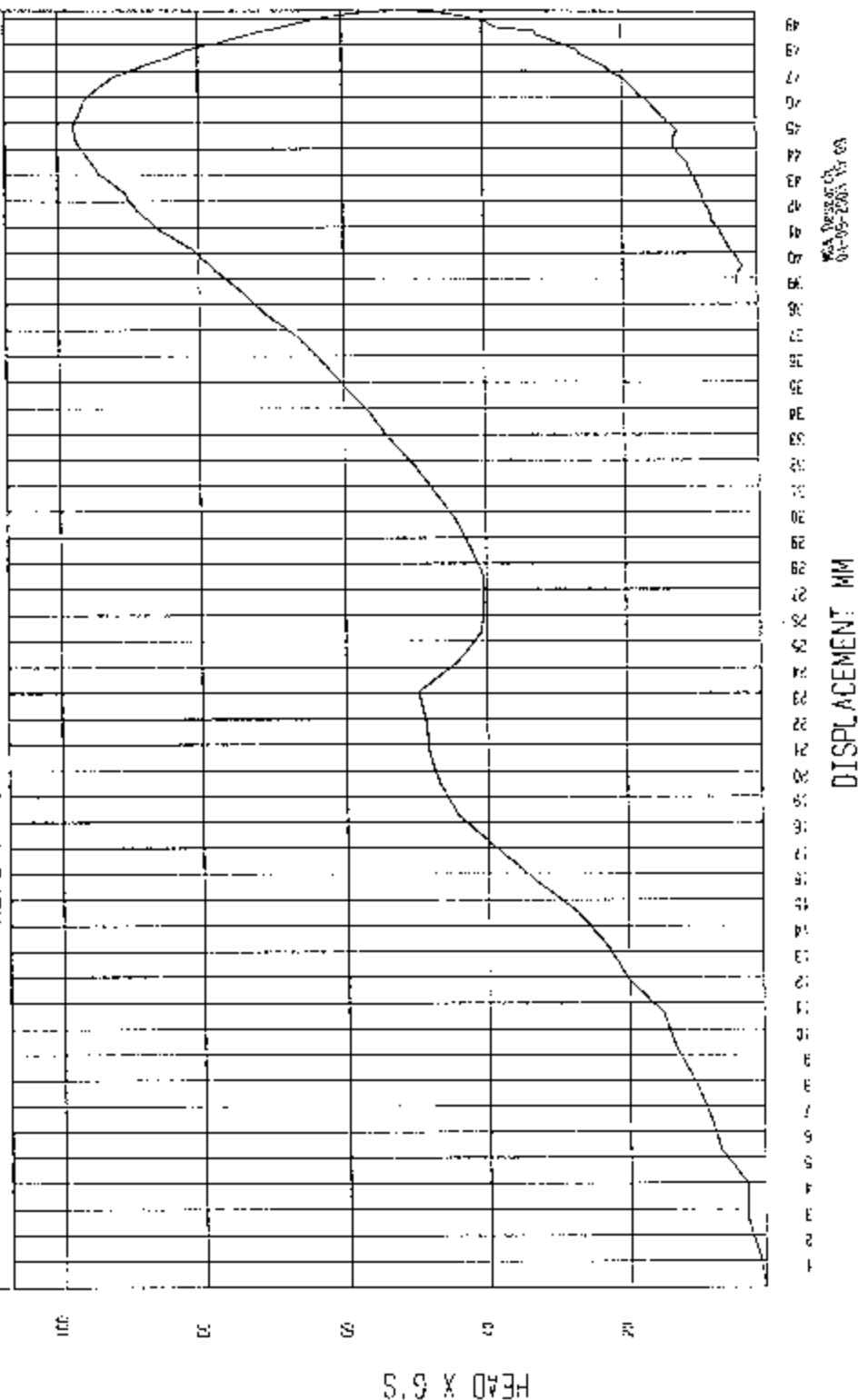
HIC(d) = 496

Impact Velocity = 23.9 (km/h)

TEST: 2003 MITSUBISHI MONTEPO SPORT FMVSS 201U TESTING C35601 4/9/03

COMPONENT: TEST #2 (FM3057) RIGHT AP1, H/V = 116/22

HEAD X as a function of DISPLACEMENT



WCA Design Co.
04-05-2004

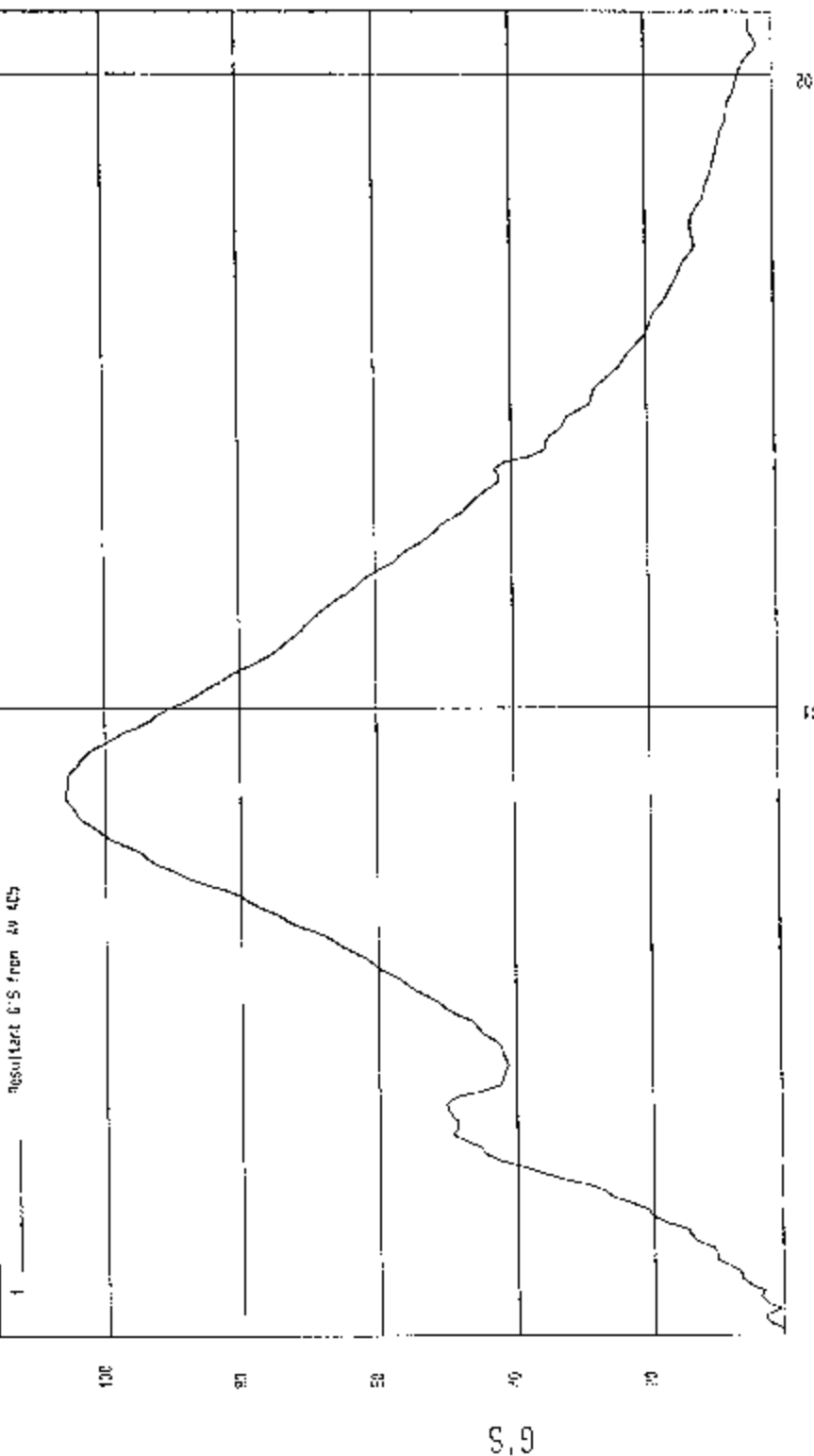
TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 2010 TESTING C35601 4/9/03

COMPONENT: TEST #2 (FM3057) RIGHT AP1, H/V = 115/22

YMIN= 0.55407 G'S at 3.99 msec YMAX= 135.9028 G'S at 0.59 msec

FMH RESULTANT

Resultant G'S from 40 405



WCA INVERTED
04-25-2003 14:28

TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C355601 4/9/03

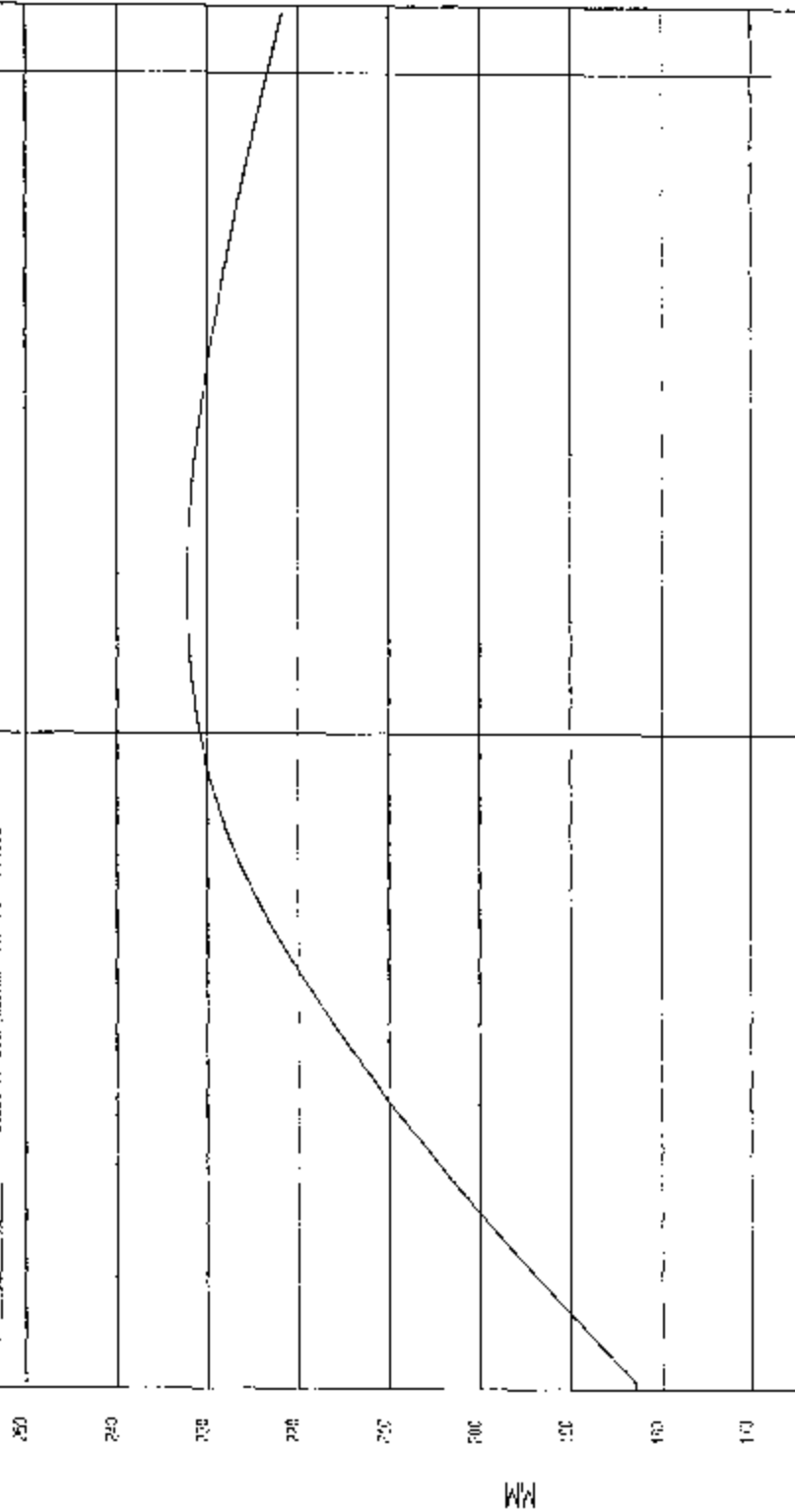
COMPONENT: TEST #2 (FM3057) RIGHT AP1, H/V = 116/22

TMCM= 182.5523 MN at 9.59 TSEC

YMAX= 232.2817 MN at 12.2 TSEC

DISPLACEMENT

1 ———— CLASS 1F DISPLACEMENT MN from AT 0.05

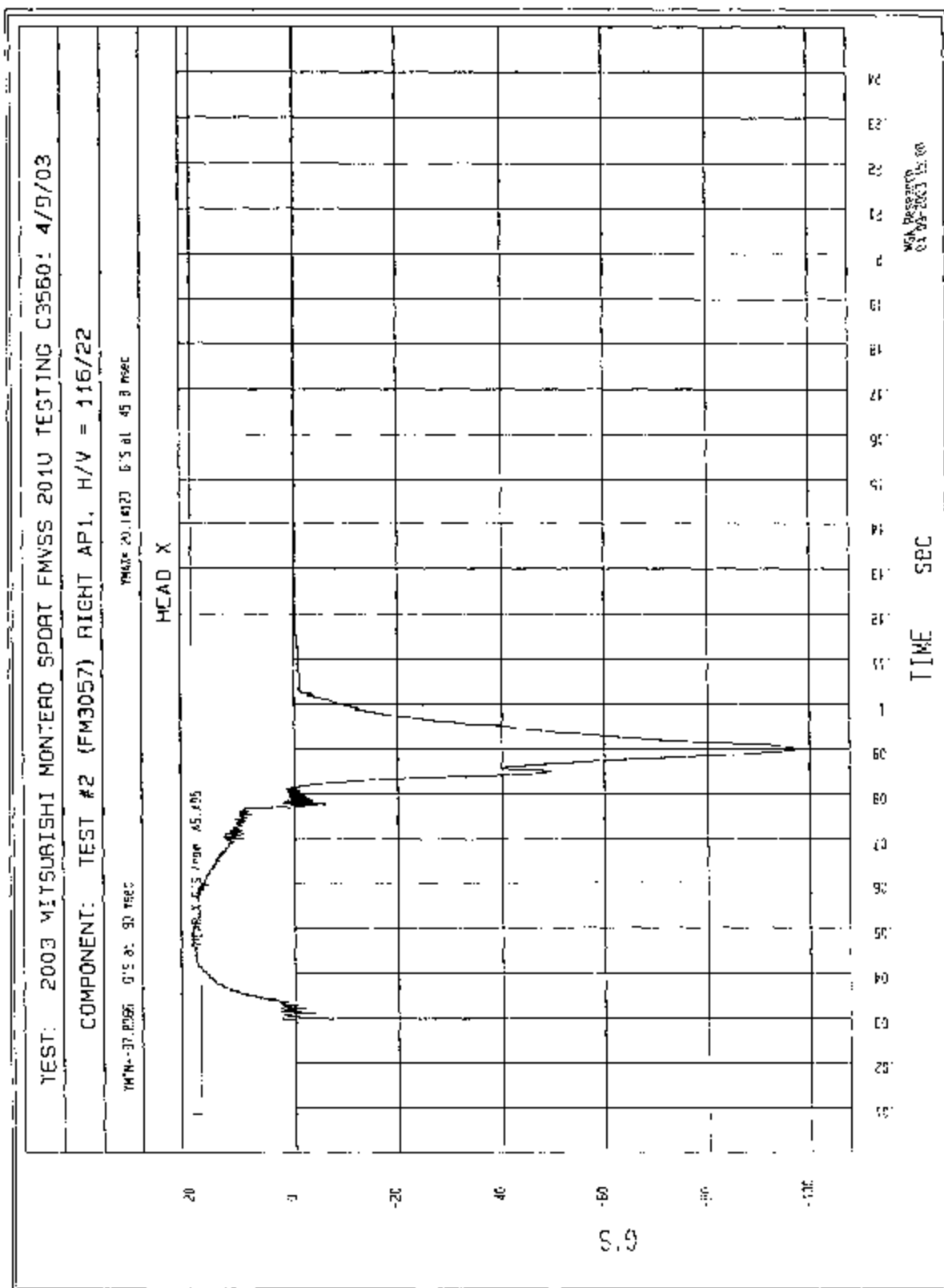


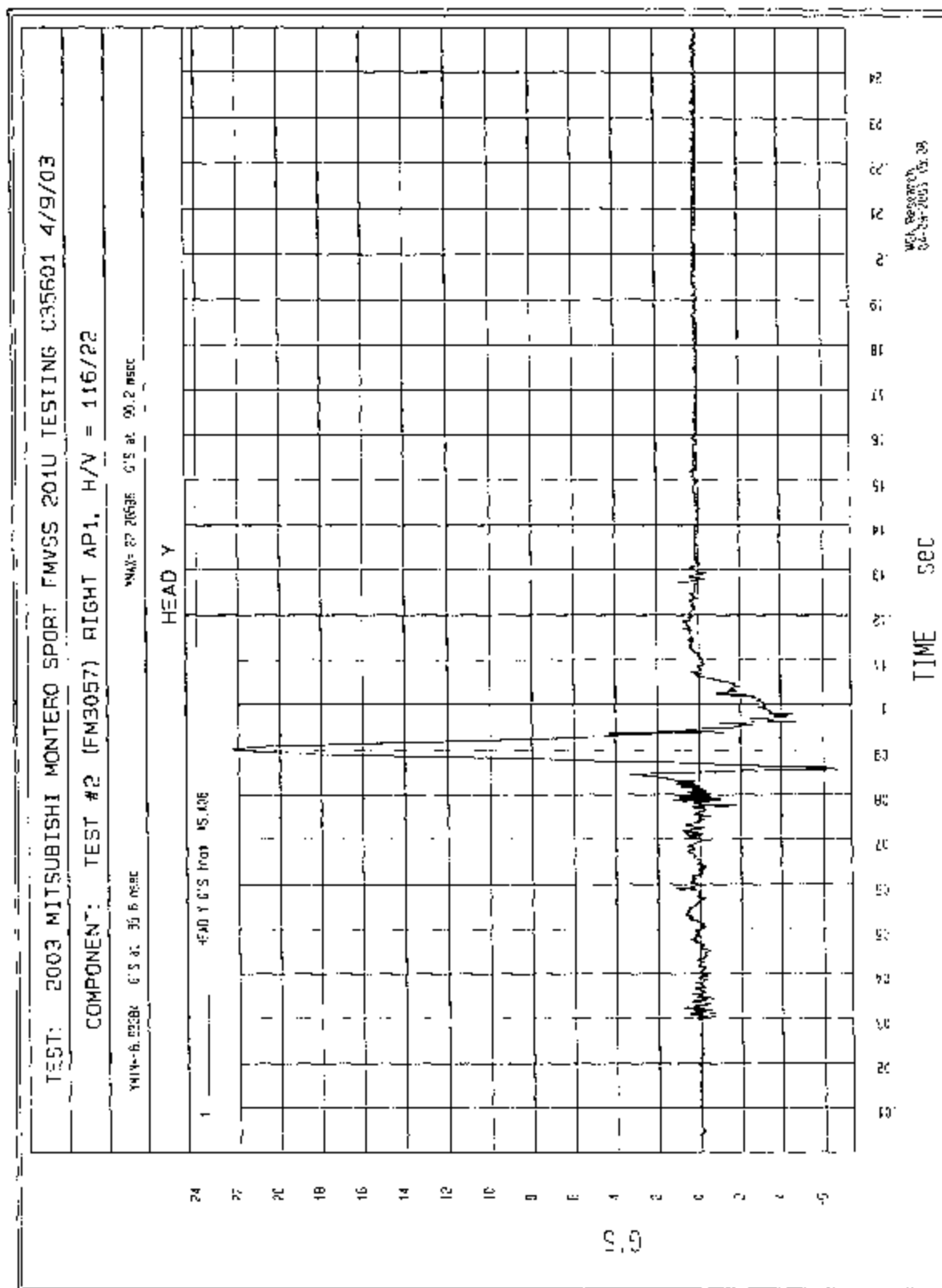
23

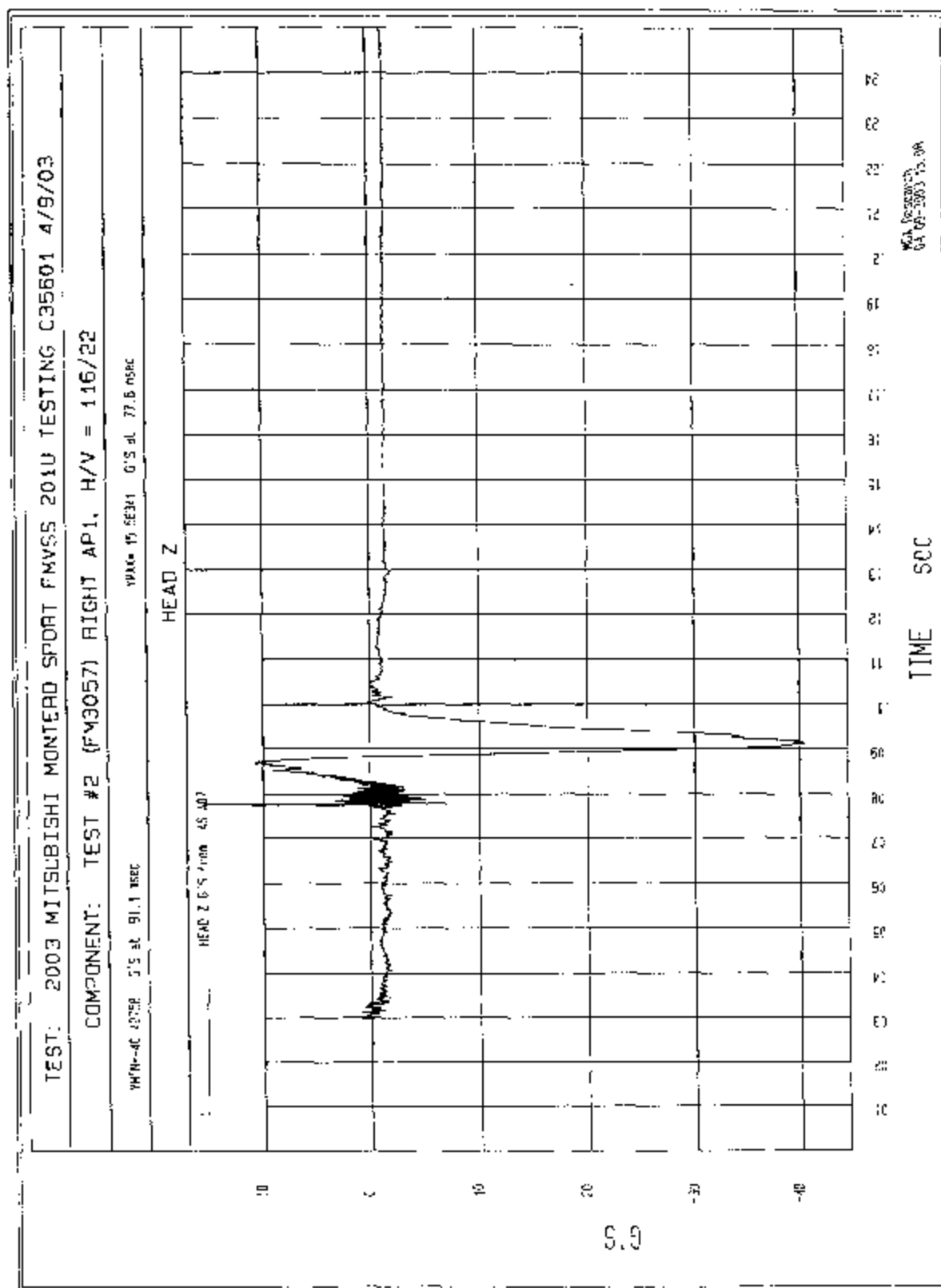
5

TIME SECONDS

WJA Generated by
04-02-2003 15:09







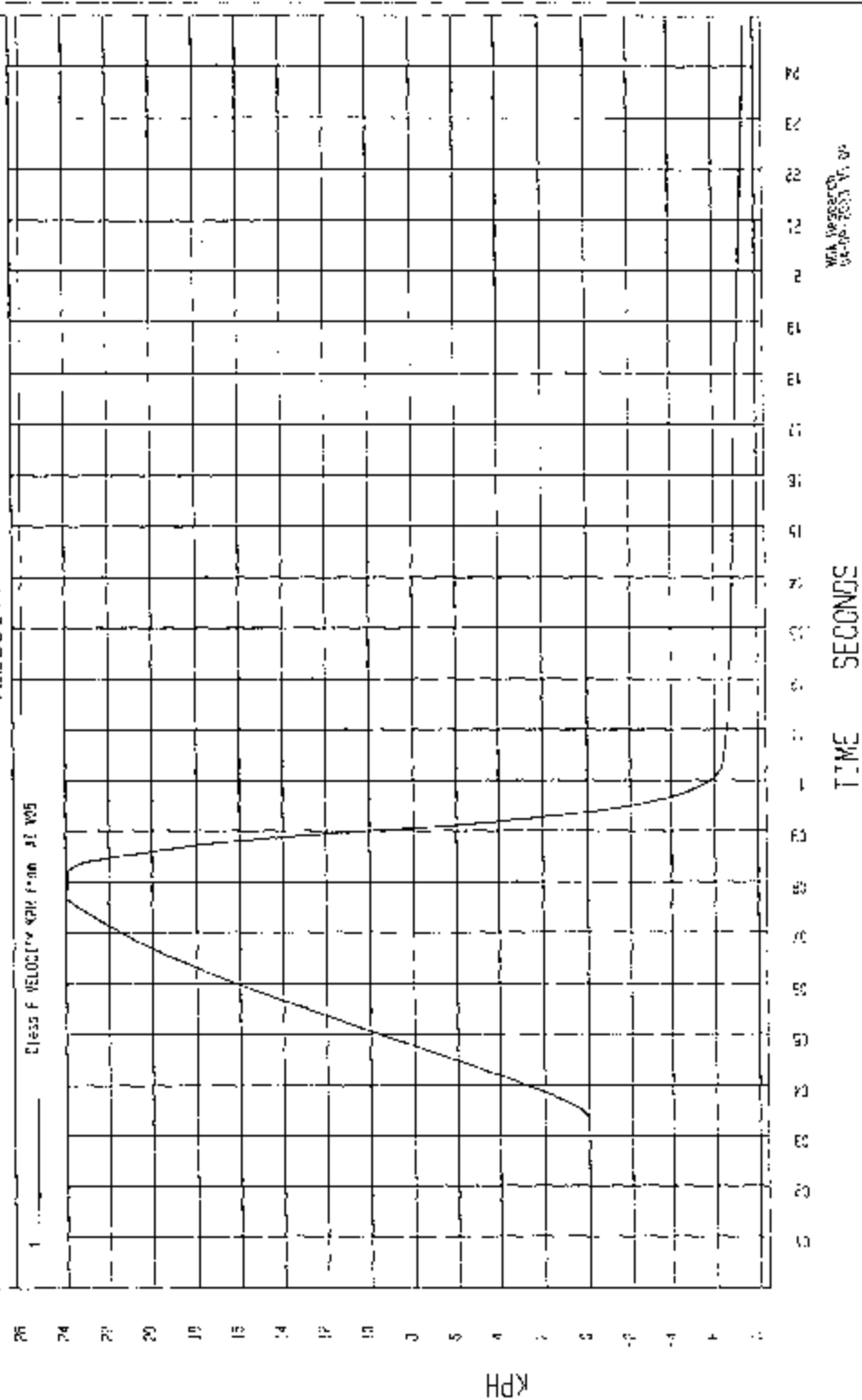
TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C35601 4/9/03

COMPONENT: TEST #2 (FM3057) RIGHT AP1, H/V = 116/22

WAVE = / 50001/ KPH at 250 KPH

YAW = 24.000/2 KPH at 17.4 msec

VELOCITY



mga

Impact Testing

4/10/03

G0315-001

FMVSS 2010 TESTING C35601

MITSUBISHI MONTERO SPORT

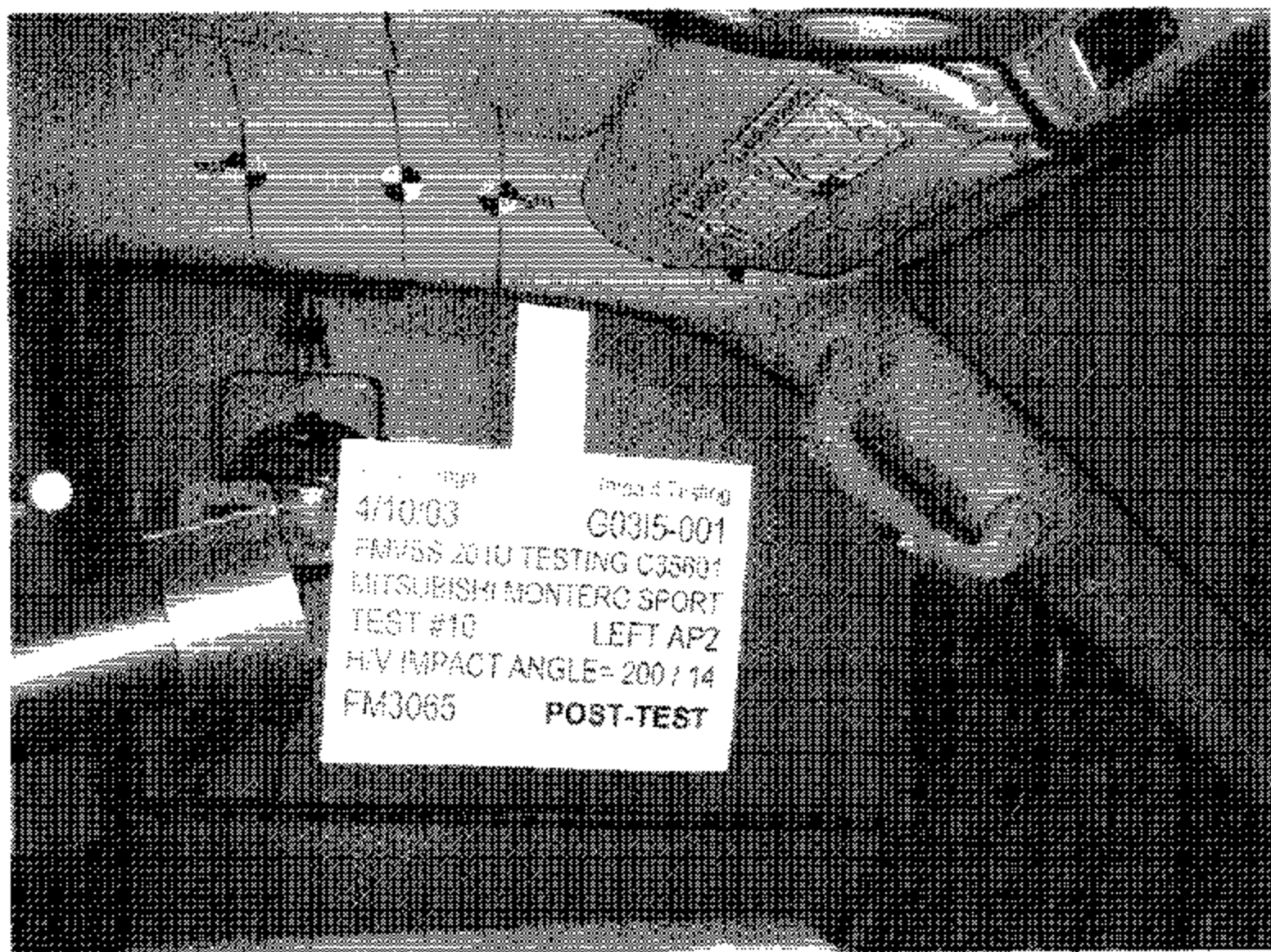
TEST #10

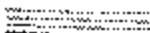
LEFT AP2

H/V IMPACT ANGLE- 200 / 14

FM3065

PRE-TEST



 mga

Impact Testing

4/10/03

G0315-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #10

LEFT AP2

H/V IMPACT ANGLE= 200 / 14

FM3065

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE: 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTERO

GENERAL TEST PARAMETERS:

Test Number: 10 SPORT

Target (Vehicle Side) (Left) Right APZ

Temperature: 24 °F (60)

MGA Test Reference No.: FM3065

Humidity: 18 %

Approach Angles: Horizontal 200 °

Time of Test: 6:10 am (pm)

Vertical 14 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	<u>(Left) Right</u> Pt. O
<u>464</u>	<u>395</u>	<u>11.3</u>	<u>23.7</u>	<u>3</u>	<u>3</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen A. Kalita Date: 4/10/03

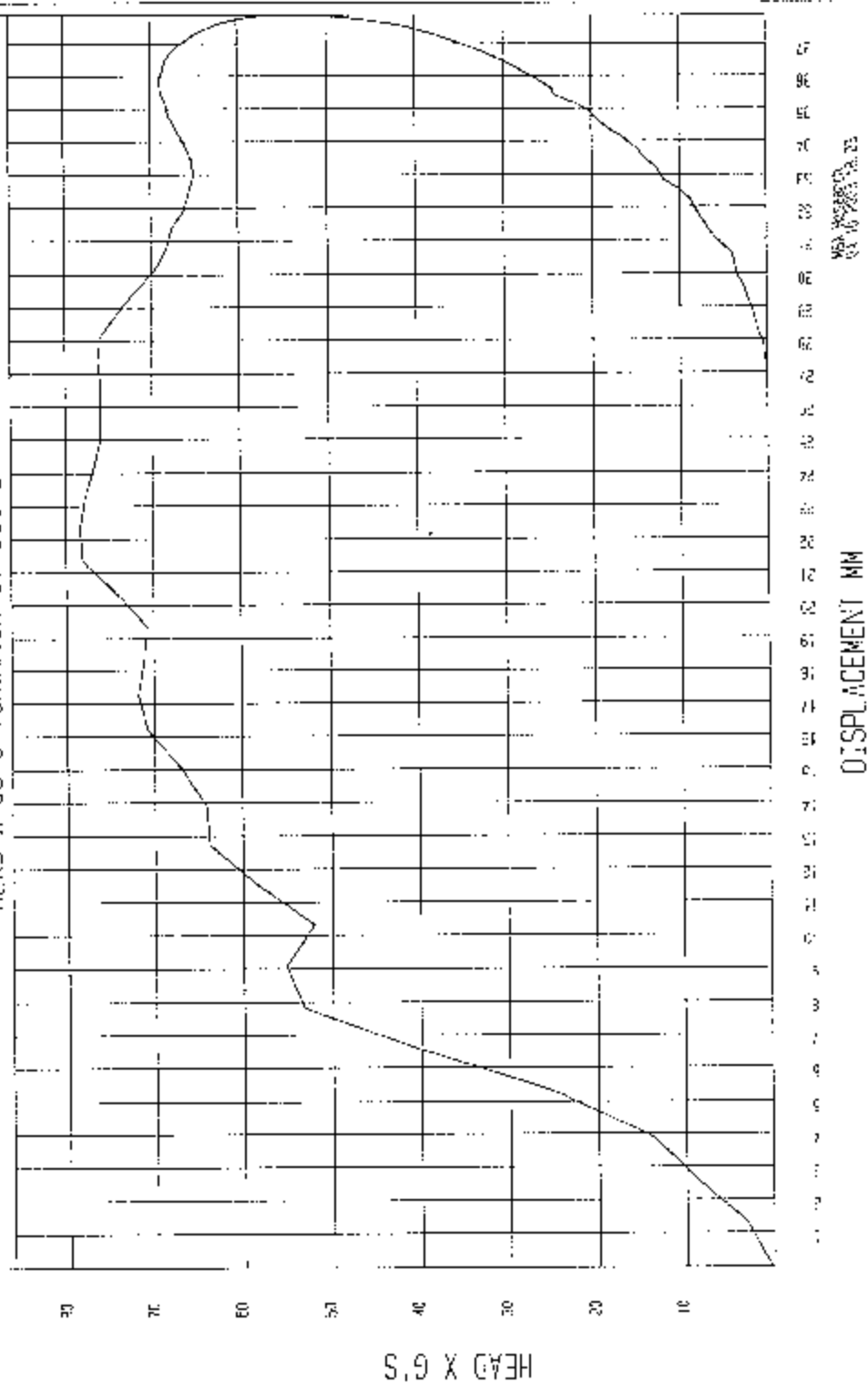
*Only necessary for NHTSA (Government) Compliance testing.

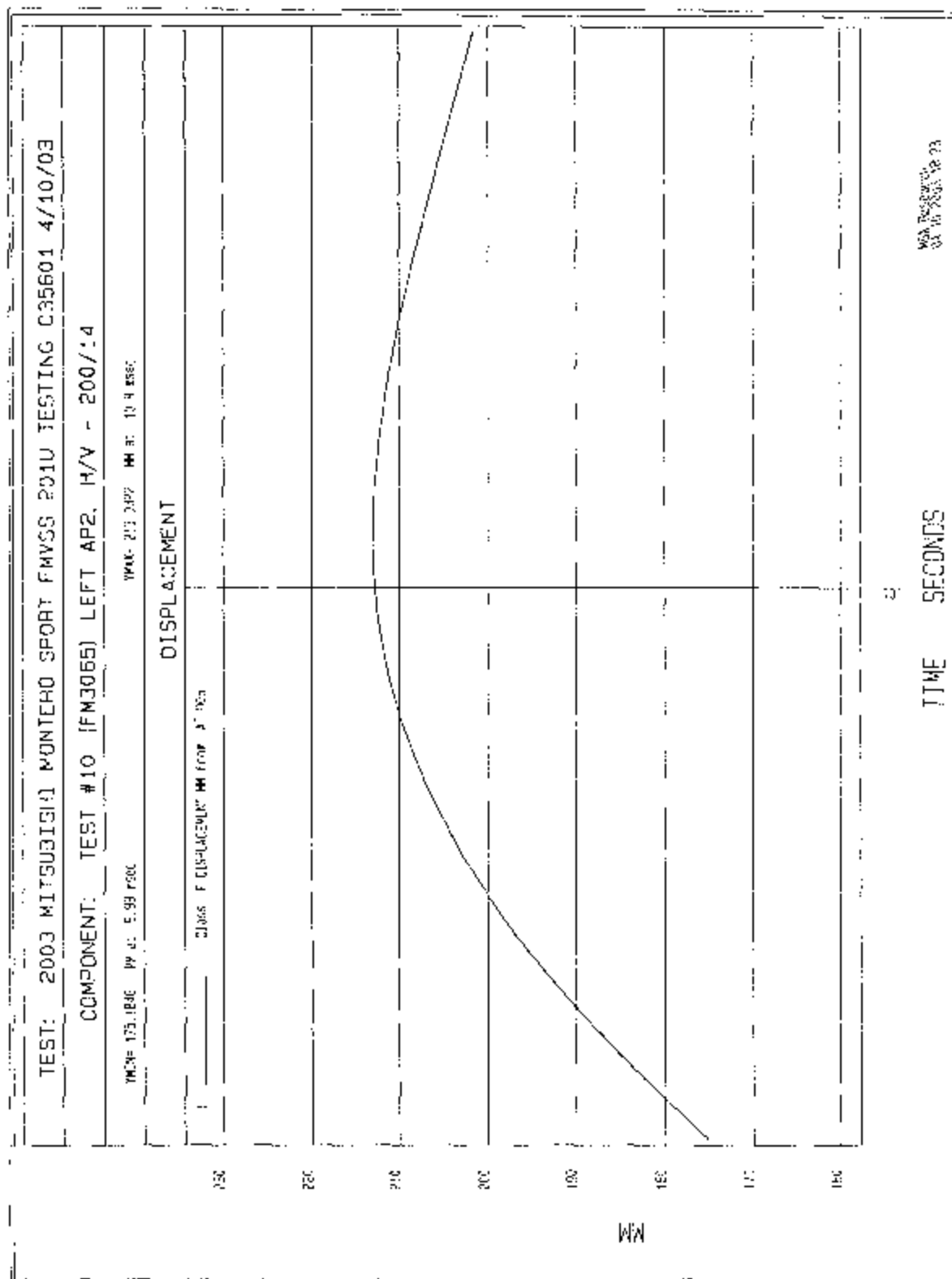
```
*****
RESULTS OF H1C36 PROGRAM
*****
input file is \NETSA\FM3065AV.A05
HIC = 394.91 calculated over 11.3 msec
T1 = 1.00 msec T2 = 12.30 msec
*****
H1C(d) = 464
Impact Velocity = 23.7 (km/h)
```

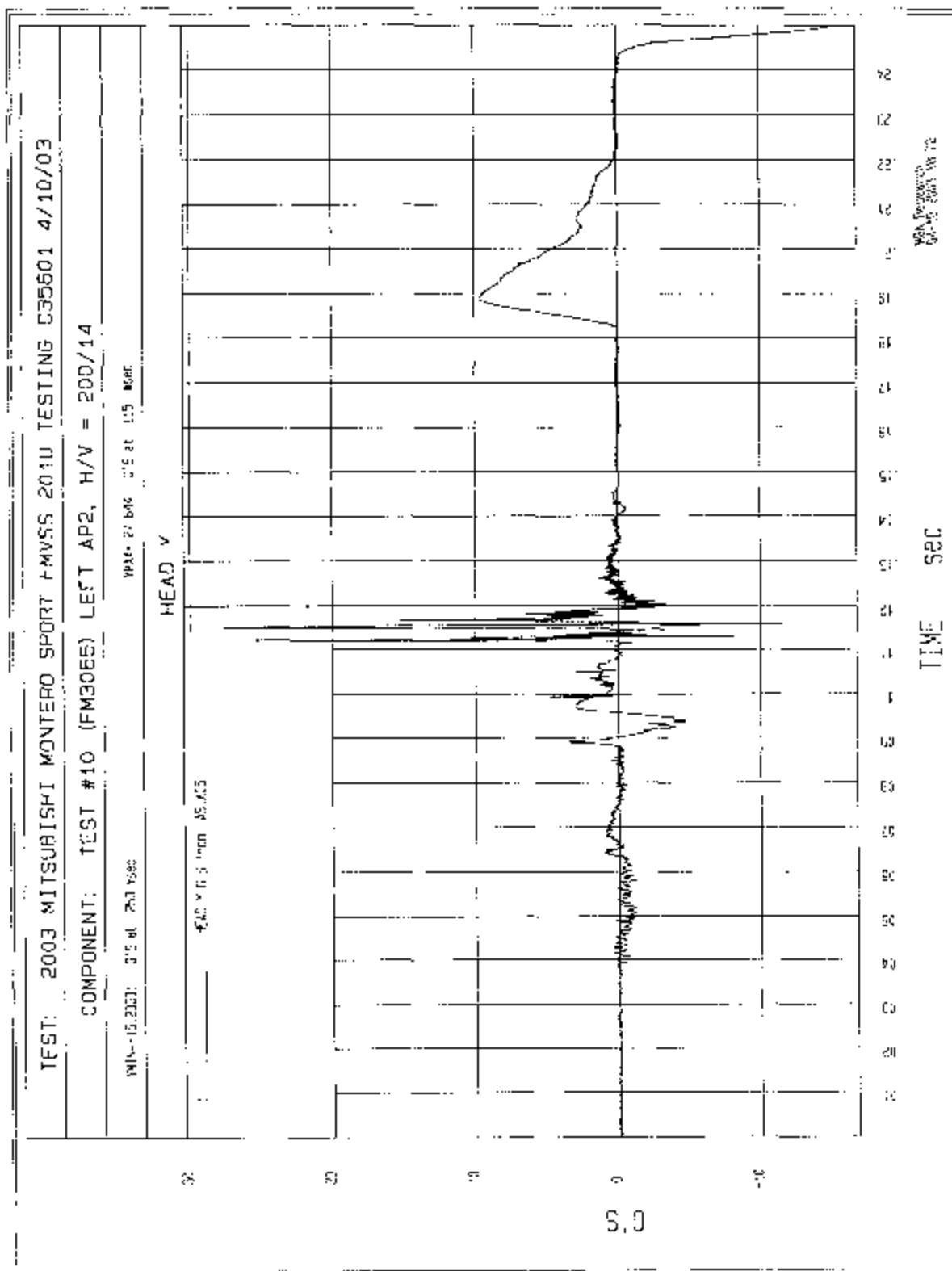
TEST: 2003 MI SURISHI MONTERO SPORT FMVSS 2010 TESTING C3J601 4/10/03

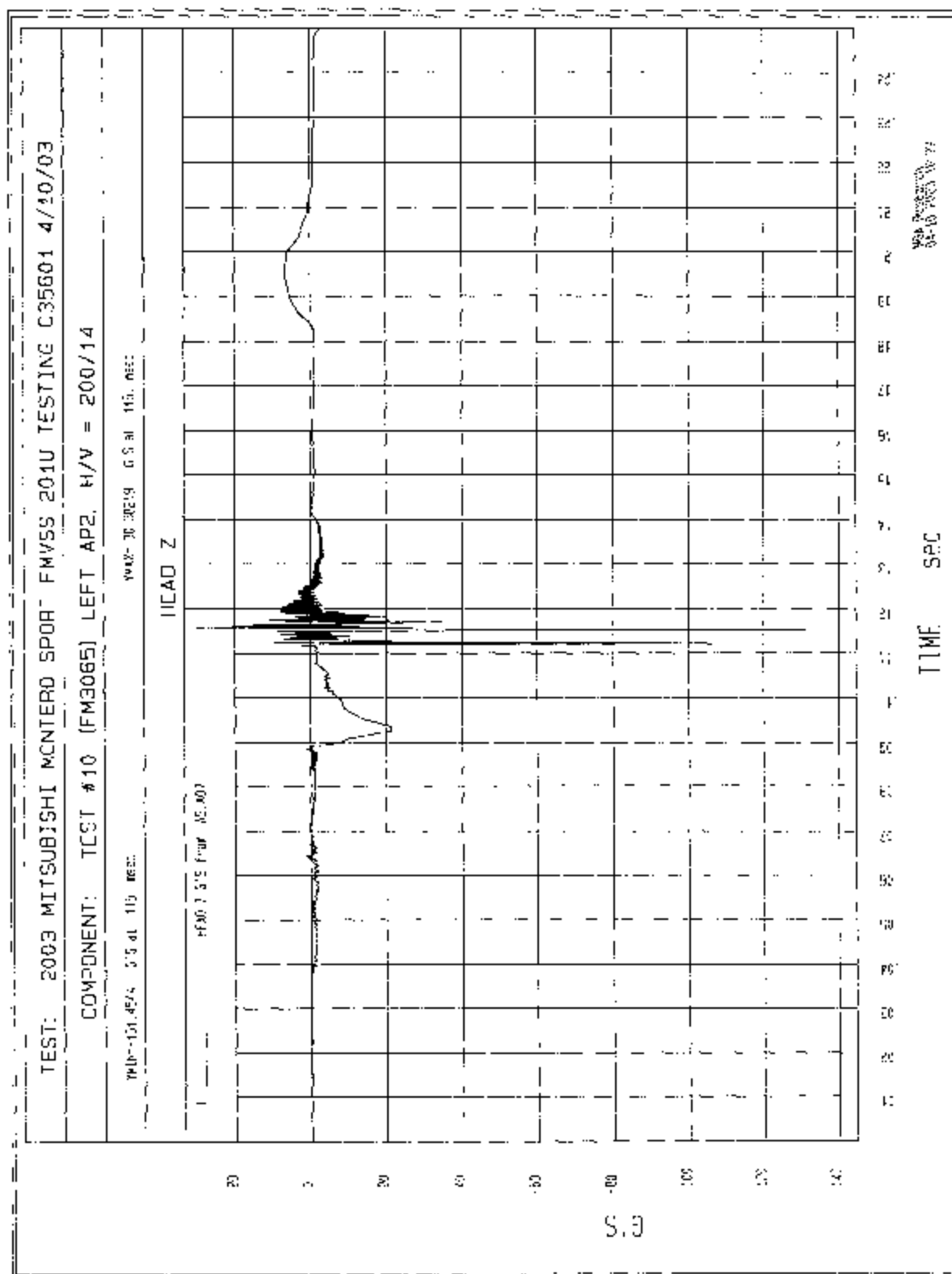
COMPONENT: TEST #10 (FM3065) IFFT AP2, H/V = 200/14

HEAD X as a function of DISPLACEMENT









TEST: 2003 MITSUBISHI MONTERO SPORT FMYSS 201U TESTING C355601 4/10/03

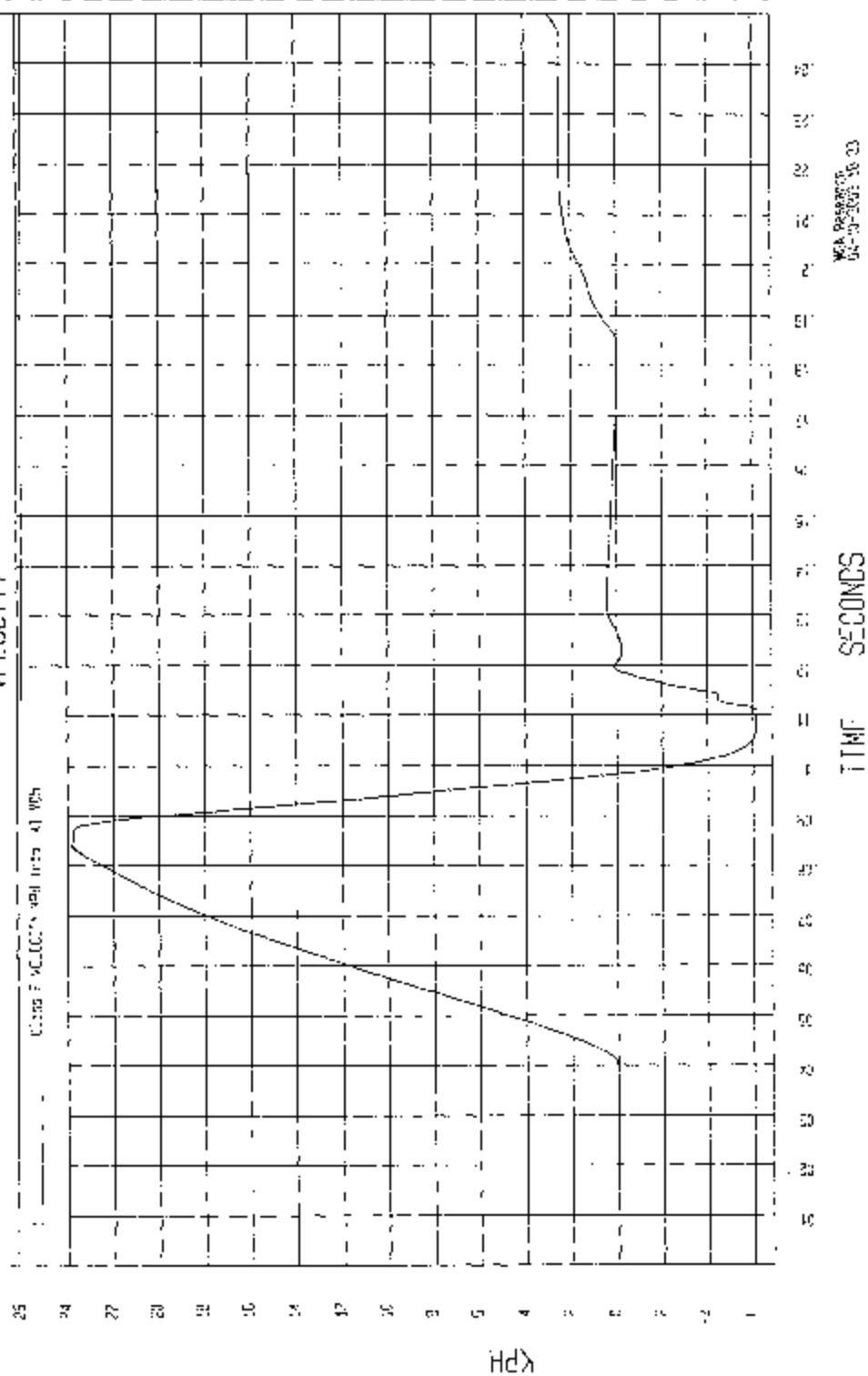
COMPONENT: TEST #10 (FM3065) LEFT AP2. H/V = 200/14

WVH-6 20000 RPM at 1000 RPM

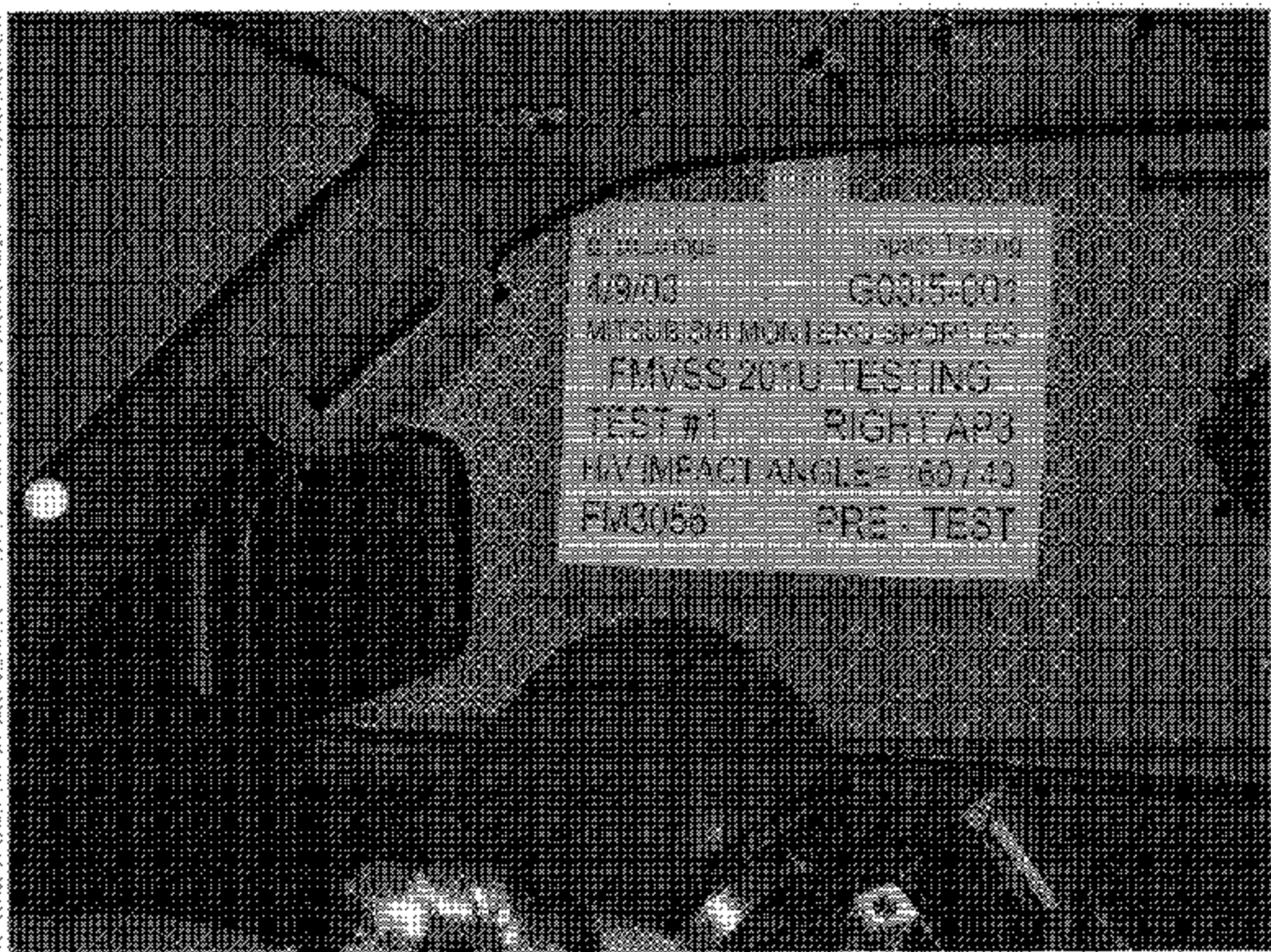
WVH-23 40000 RPM at 24 1/2 RPM

VELOCITY

CLIP F VELOCITY (RPM) at 1000



WVA Resonance
04-07-2003 16:20



Impact Testing
4/3/03 G03.5-001
MITSUBISHI MONTEPO SPORT ES
FMVSS 2010 TESTING
TEST #1 RIGHT AP3
HV IMPACT ANGLE = 160 / 43
FM3056 POST-TEST

Impact Testing
4/9/03 G0315-001
MITSUBISHI MONTERO SPORT ES
FMVSS 201U TESTING
TEST #1 RIGHT AP3
H/V IMPACT ANGLE= 160 / 43
FM3056 POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U FRAME #2.4

DOC NO: MGATP201U FRAME #2
REVISION NO: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTCLARO SPORT

GENERAL TEST PARAMETERS:

Target: (Vehicle Side): left right AP3

Test Number: 1

Temperature: 23.25 °F (C)

MGA Test Reference No.: FM3056

Humidity: 19 %

Approach Angles: Horizontal 160 °

Time of Test: 2:00 am pm

Vertical 43 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δ: (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
500	442	12.3	23.6	9	2

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-93.1		
Y	6	J35919	95.3		
Z	7	J31051	95.1		

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

THE CRASH HANDLE WAS BROKE DURING TESTING

Recorded By: [Signature] Approved By*: Helen A. Kalido Date: 4/9/03

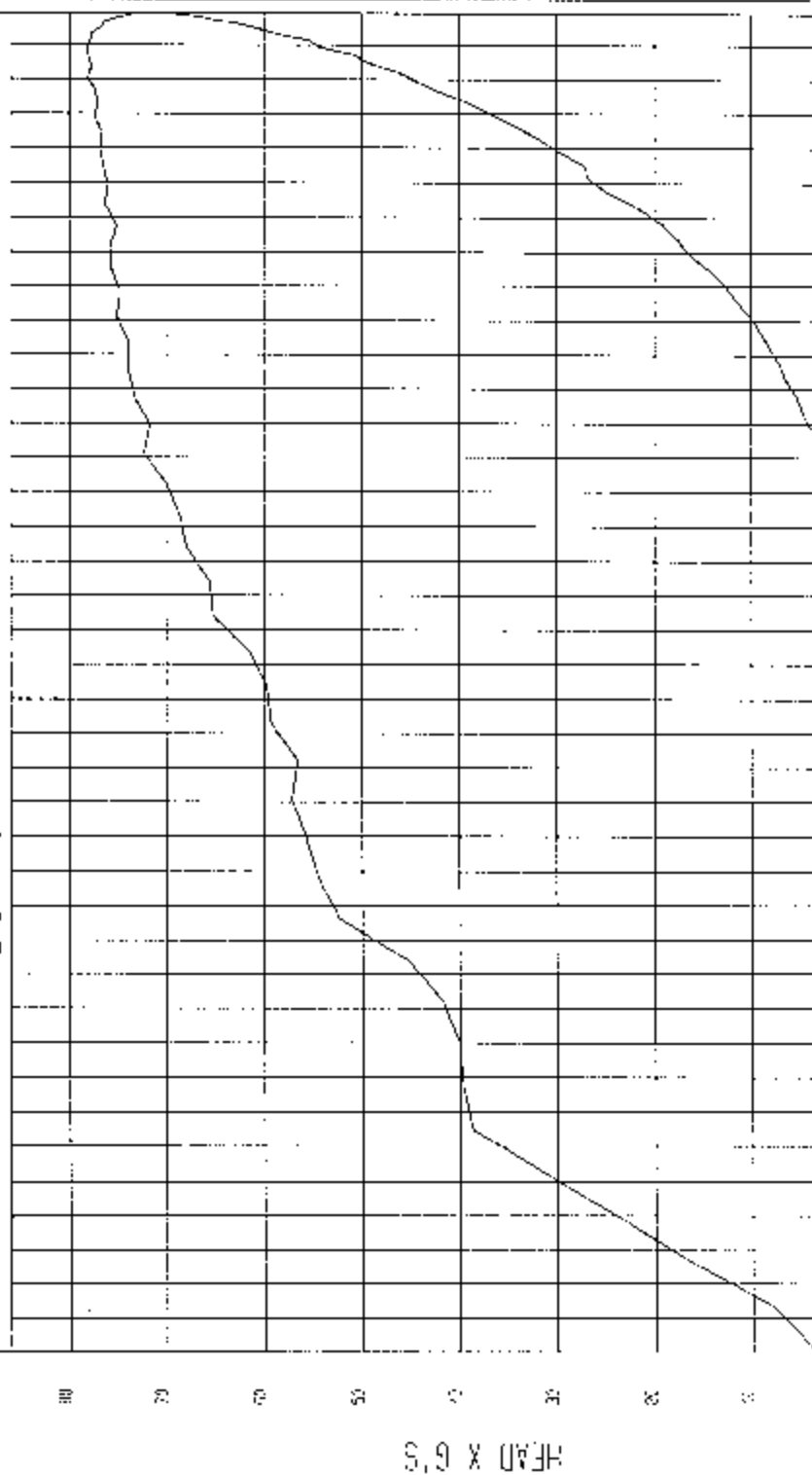
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
Input file is \NHTSA\FM3056AV.A05
HIC = 441.60 calculated over 12.3 msec
T1 = 1.10 msec T2 = 13.40 msec
*****
HIC(d) = 500
Impact Velocity = 23.6 (km/h)
```

TEST: 2003 MITSUBISHI MONTERO SPORT C35601 FMVSS 2010 TESTING 4/9/03

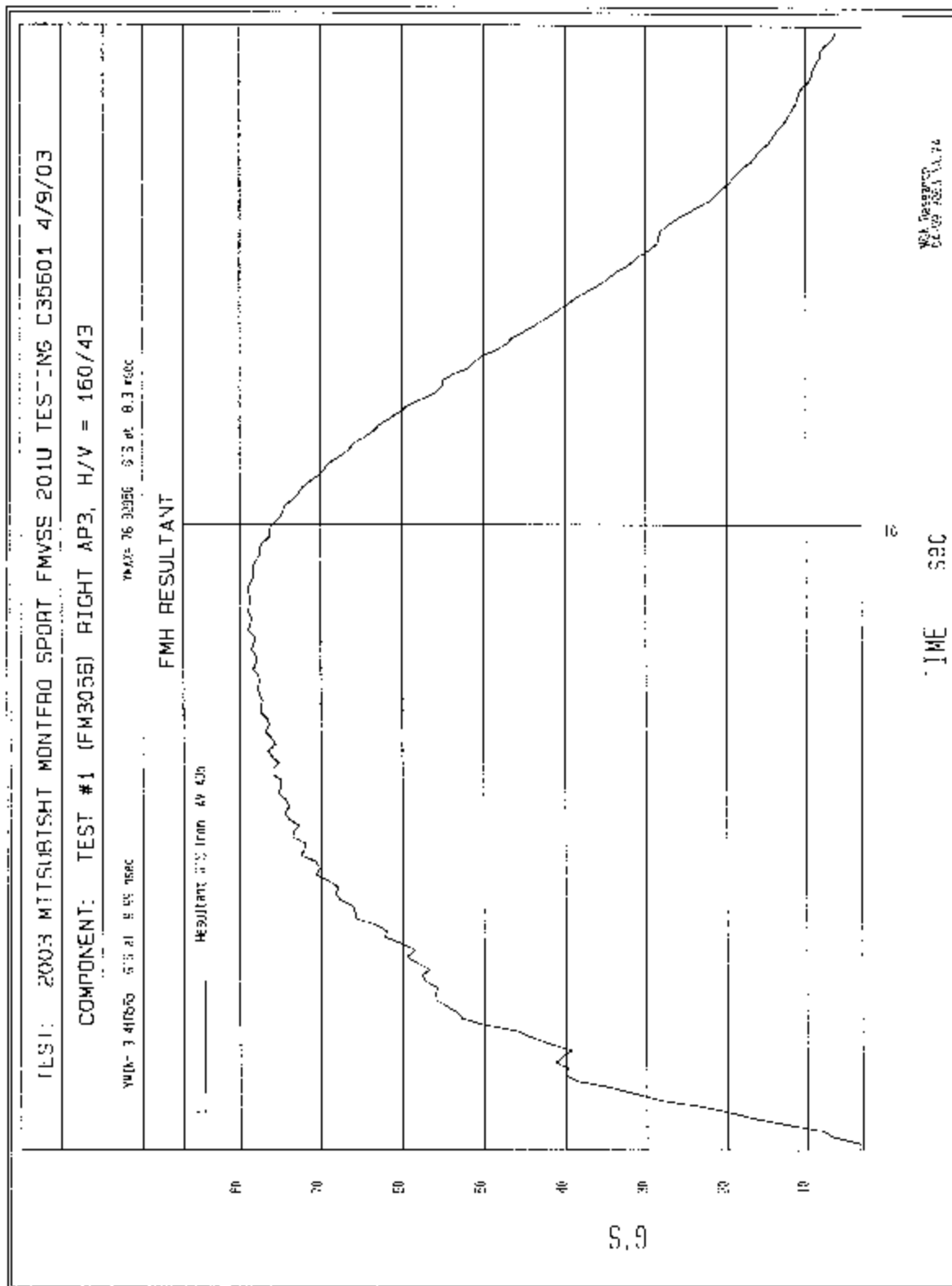
COMPONENT: TEST #1 (FM3056) HIGH AP3, H/V = 160/43

HEAD X as a function of DISPLACEMENT

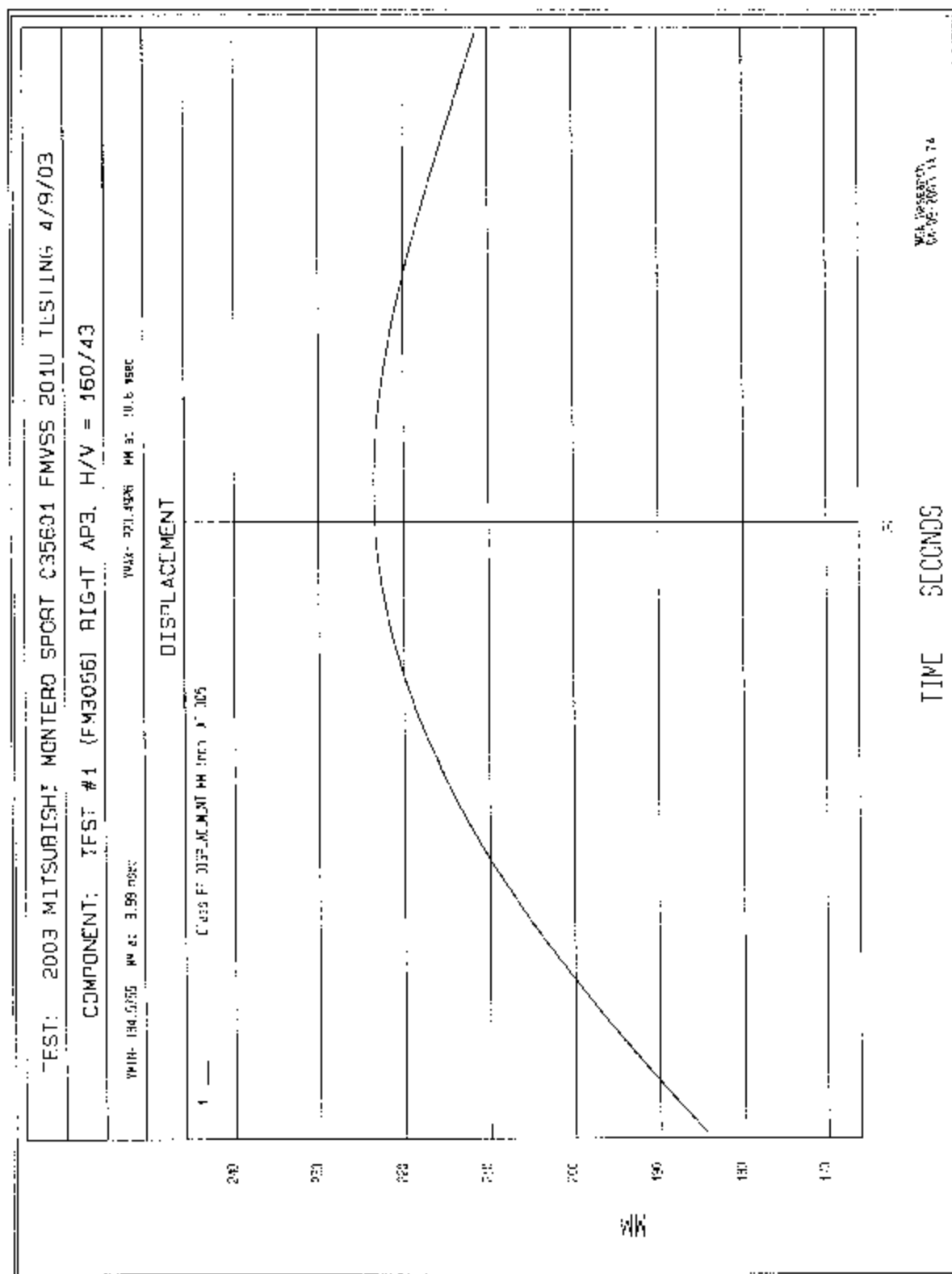


MSA Computer
SA 04 2003 14:24

DISPLACEMENT MM



S.9



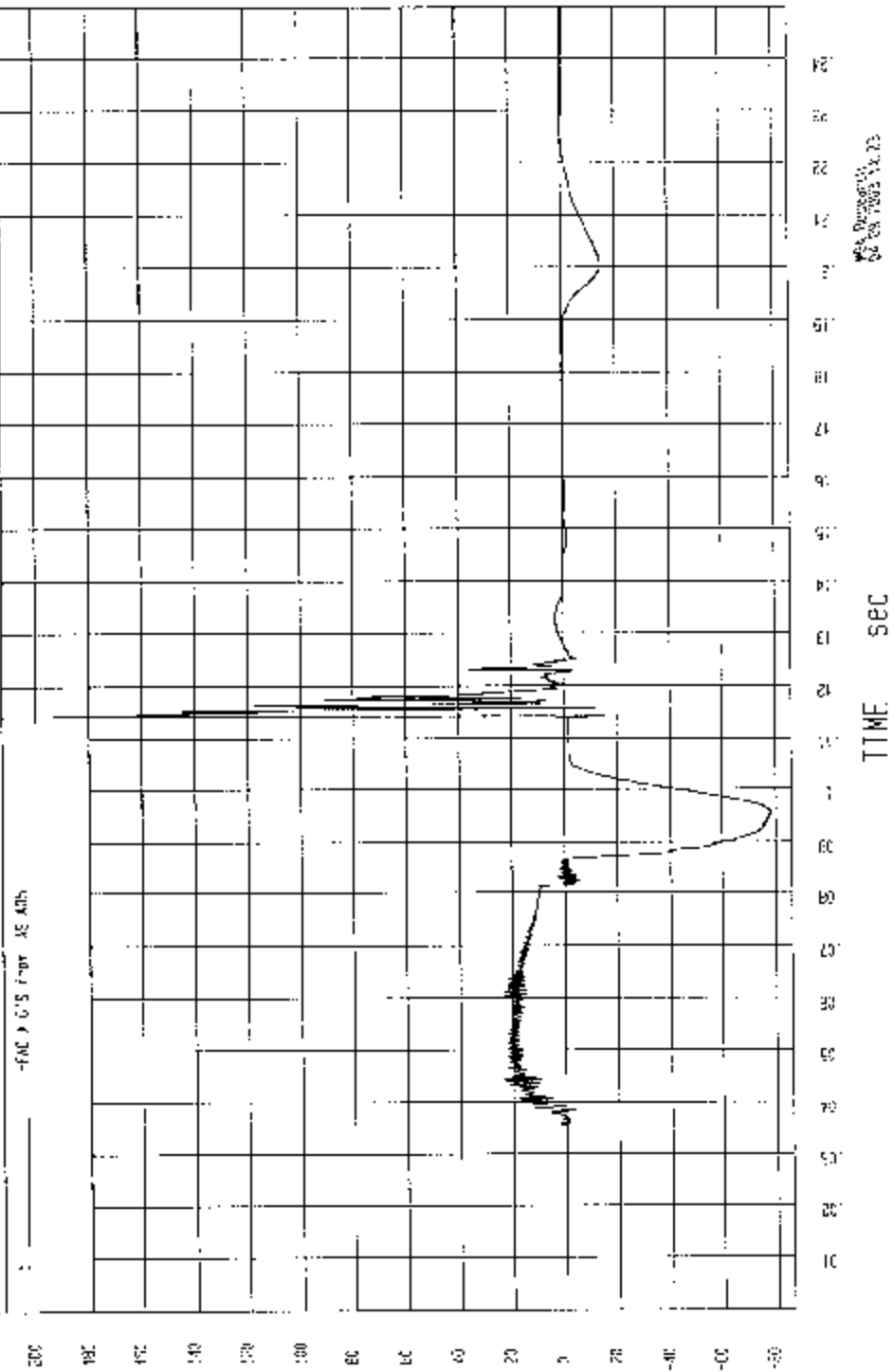
TEST: 2003 MITSUBISHI MONTERO SPORT C35601 FMVSS 201U TESTING 4/9/03

COMPONENT: TEST #1 (FM3056) RIGHT AP3, H/V = 160/43

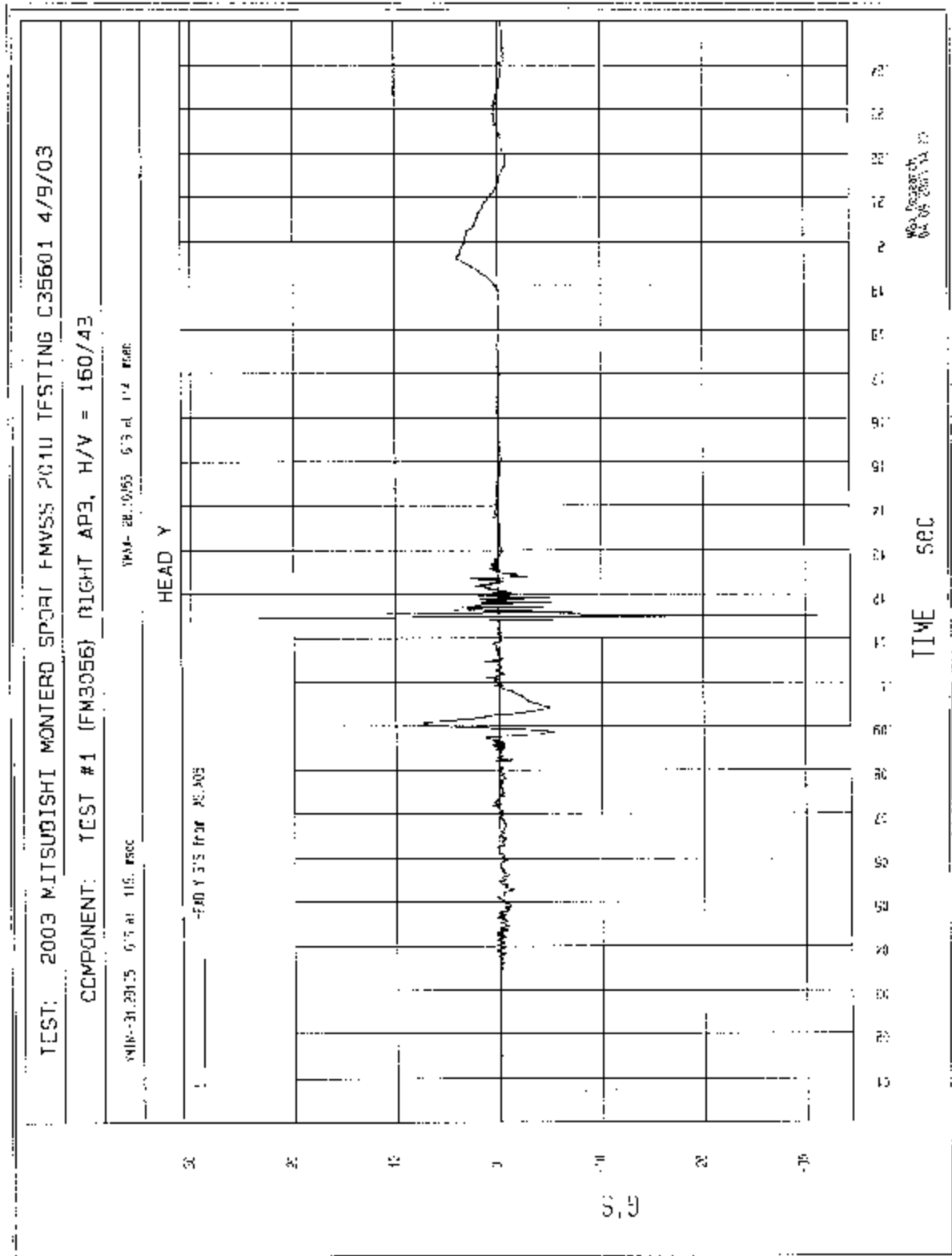
FMVSS-201 1500C 6 S AL 95.7 msec

MMAX= 133.47V/ 0.15 at 1.54 msec

HEAD X



5.9

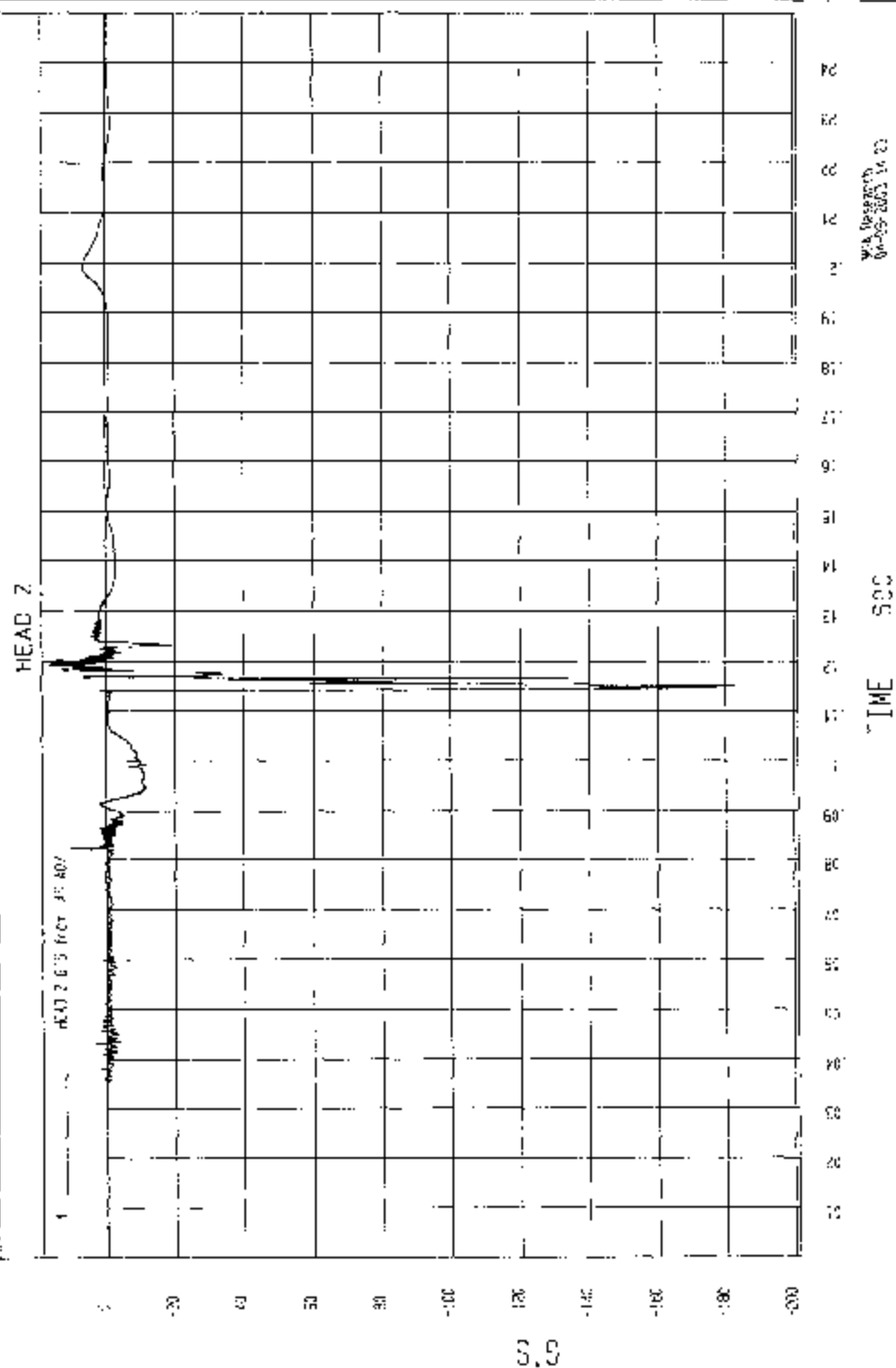


TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 203U TESTING C35601 4/9/03

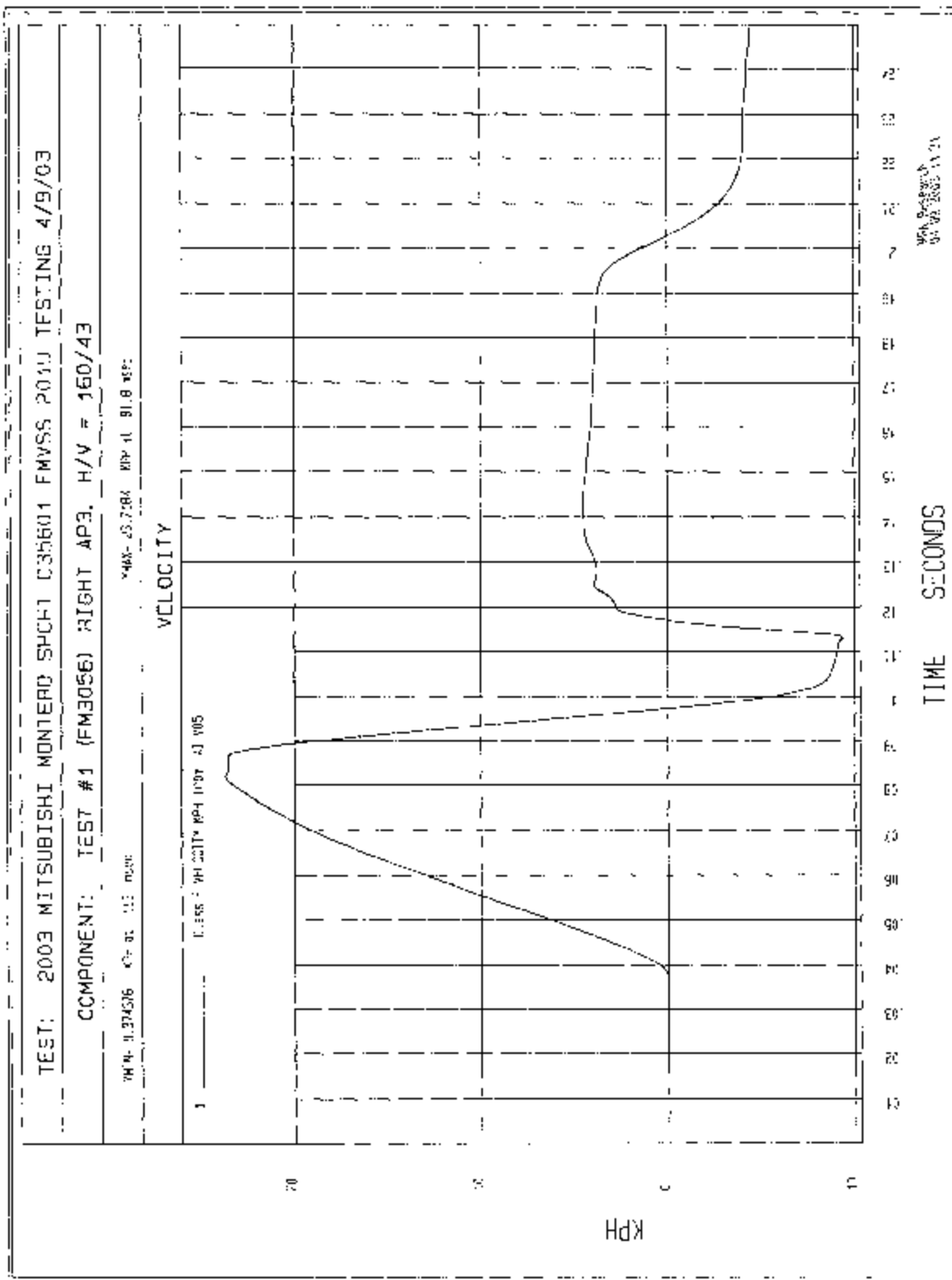
COMPONENT: TEST #1 (FM3056) RIGHT AP3, H/V = 160/43

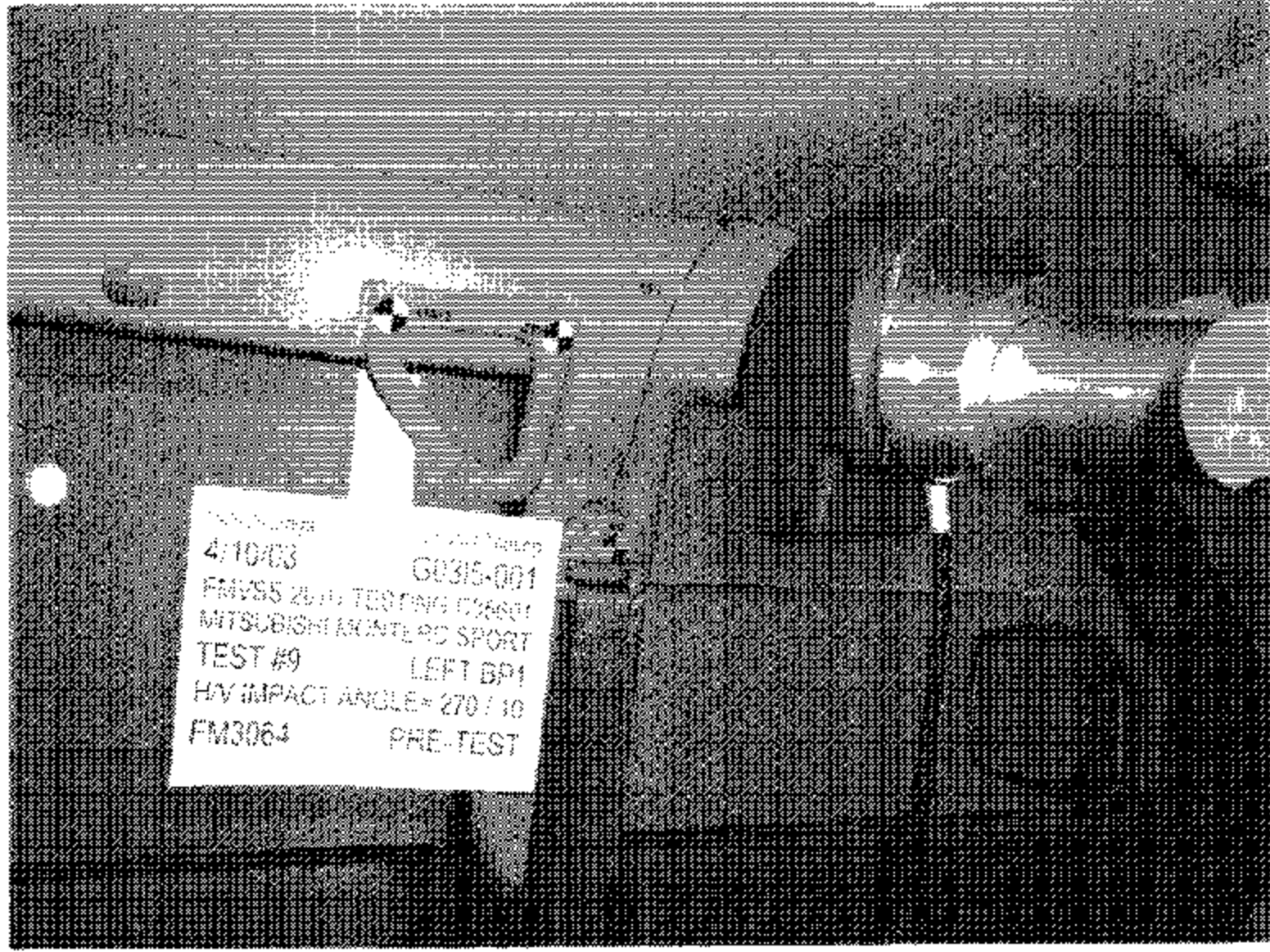
WVA-102 8537 0'S AL 1'S REE

WVA-102 8537 0'S AT 1'S REE



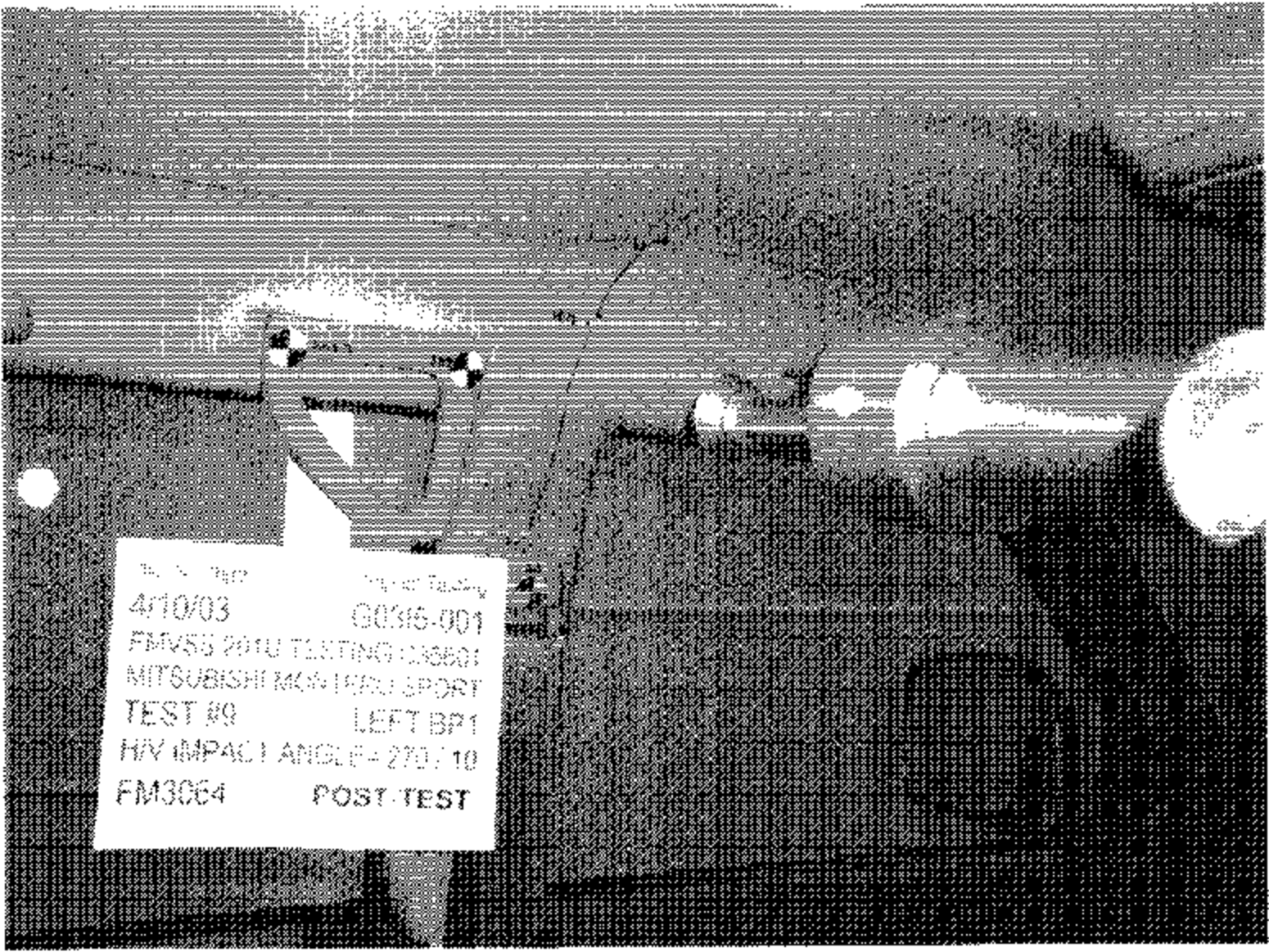
3.5





4/10/03
FMVSS 26.11 TESTING C26601
MITSUBISHI MONTE RO SPORT
TEST #9
H/V IMPACT ANGLE = 270 / 10
FM3064

G0315-001
LEFT BP1
PRE-TEST



4/10/03
FMVSS 2010 TESTING 138501
MITSUBISHI MONDIAU SPORT
TEST #9 LEFT BP1
H/V IMPACT ANGLE = 270 / 10
FM3064 POST-TEST

===== mga

Impact Testing

4/10/03

G0315-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #9

LEFT BP1

H/V IMPACT ANGLE= 270 / 10

FM3064

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC NO: MGATP201U_FRAME #2
REVISION NO: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2000 MITSUBISHI MONTERO SPORT

GENERAL TEST PARAMETERS:

Test Number: 9

Target (Vehicle Side): Left BPI

Temperature: 75.9 °F

MGA Test Reference No.: FM3064

Humidity: 22 %

Approach Angles: Horizontal 270 °

Time of Test: 5:00 am pm

Vertical 10 °

FMH Serial No: 38

TEST RESULTS:

H/C(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>467</u>	<u>399</u>	<u>14.9</u>	<u>23.4</u>	<u>39</u>	<u>S</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36142</u>	<u>-108.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36143</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

No Visible Damage

Recorded By: [Signature] Approved By: Helen H. Kalish Date: 4/10/03

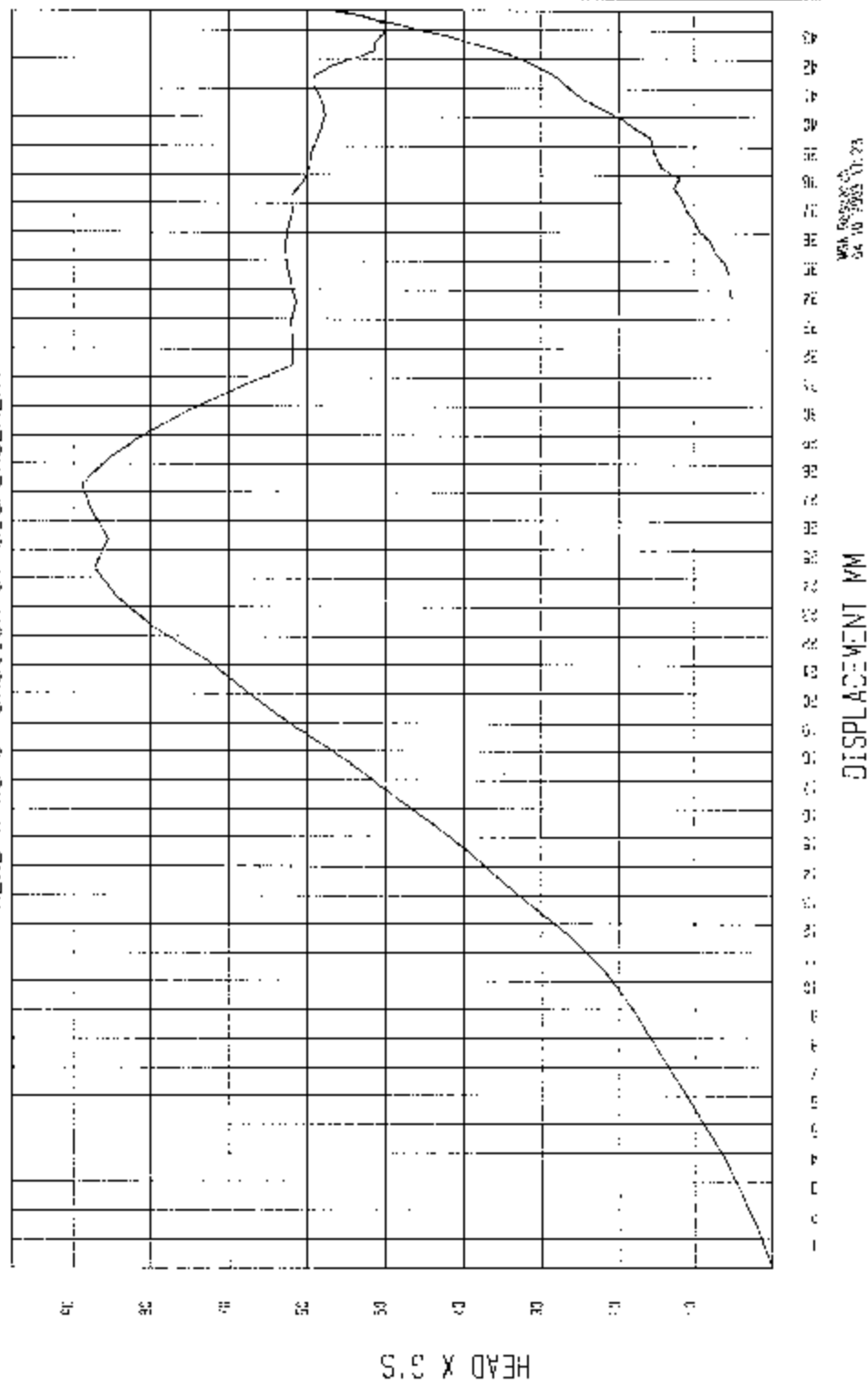
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3064AV.A05
HIC = 398.92 calculated over 14.9 msec
T1 = 2.10 msec T2 = 17.00 msec
*****
HIC(d) = 467
Impact Velocity = 23.4 (km/h)
```

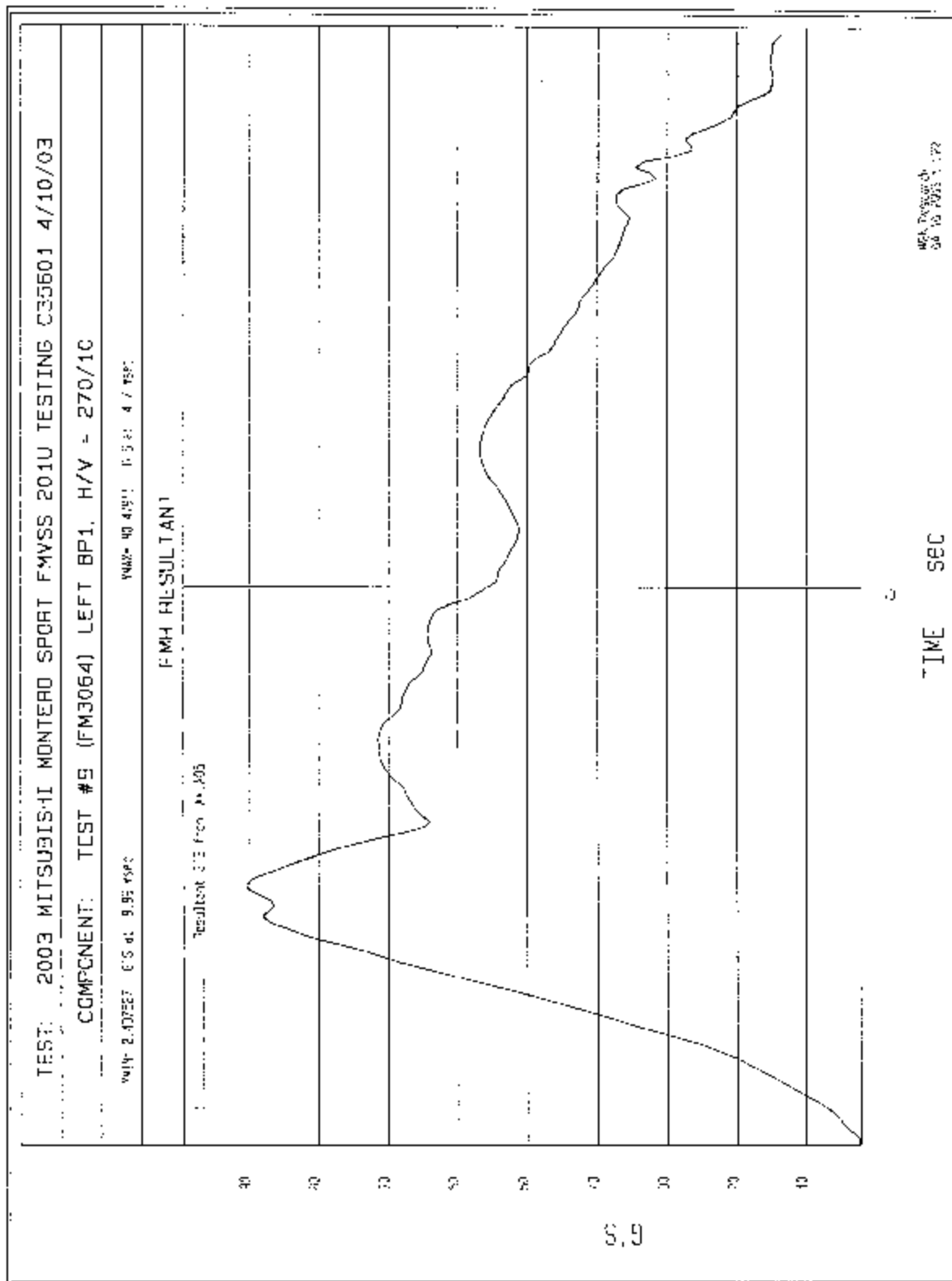
TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201J TESTING C35601 4/10/03

COMPONENT: TEST #9 (FM3064) LEFT BP1, H/V = 270/10

HEAD X as a function of DISPLACEMENT



WMA 005000-01
04 10 2003 11:23



TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C35601 4/10/03

COMPONENT: TEST #9 (FM3064) LEFT DP1, H/V = 270/±0

WAVE 107 2015 MM AT 3.55 MHz

WAVE 204 3703 MM AT 4.4 MHz

0° SPI ACCEMENT

CLASS 11 EQUIPMENT MM 1750 41 USA

250

240

230

220

210

200

190

180

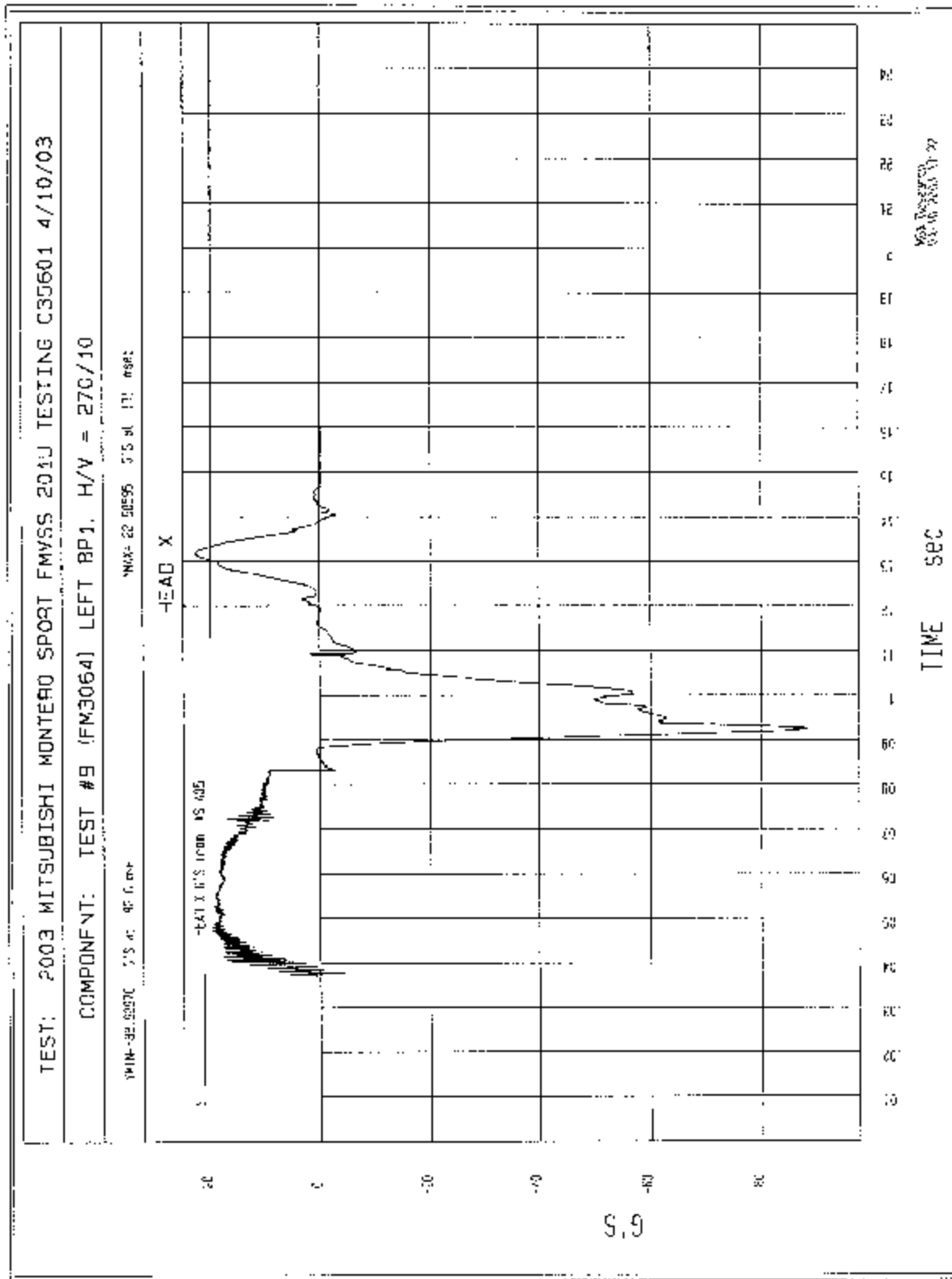
170

MM

3

TIME SECONDS

WAVE REPORT
C35601-2003-03



TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C35501 4/10/03

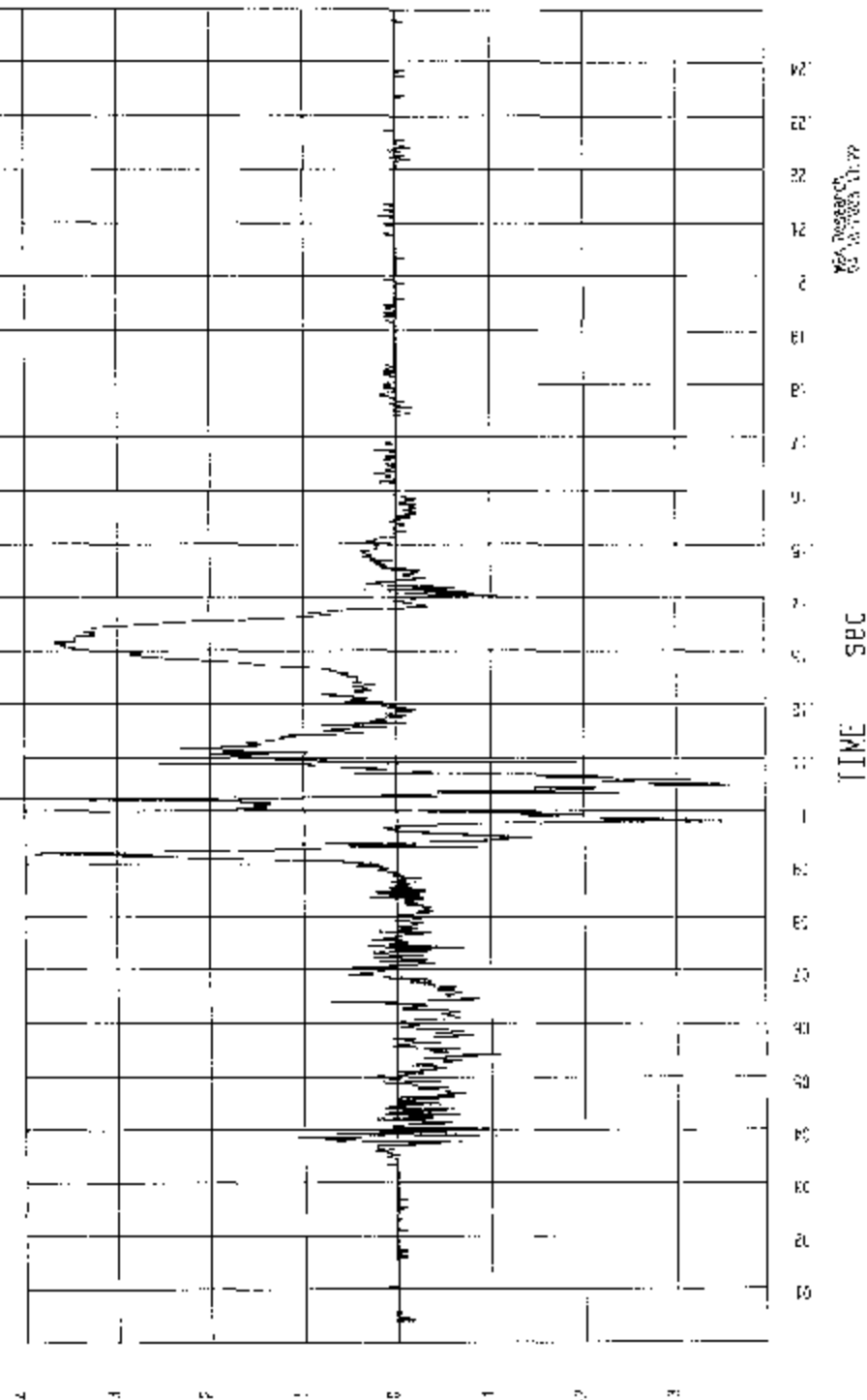
COMPONENT: TEST #9 (FM3064) LEFT BP1 H/V = 270/10

WVH-3 54859 0.5 sec 104.0000

WVH-4 302827 0.5 sec 132.0000

HEAD Y

1 4000 0.5 sec 1000 45 405



S.9

TEST: 2003 MITSUBISHI MONTEAD SPORT FMVSS 201U TESTING C35601 4/10/03

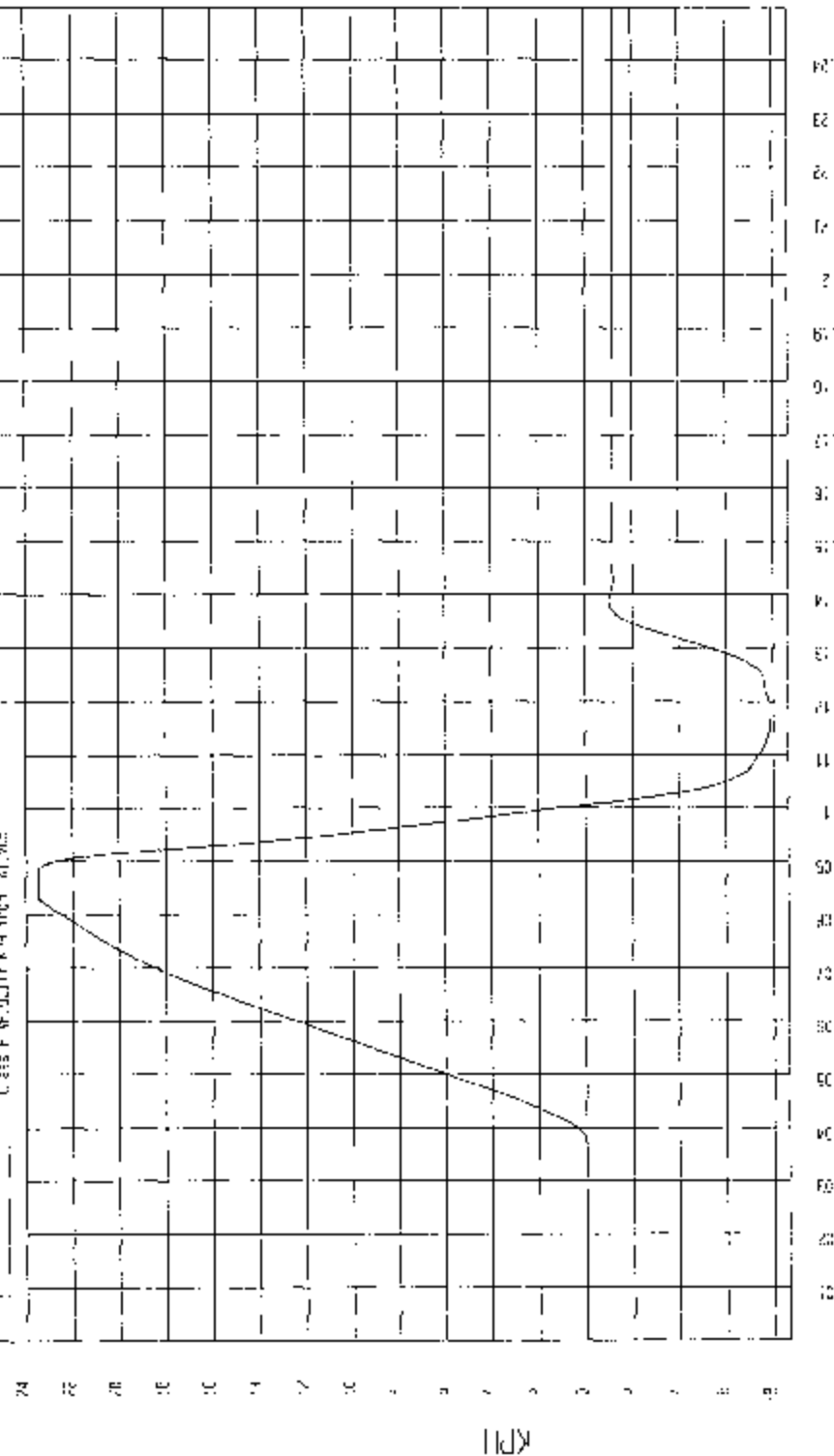
COMPONENT: TEST #9 (FM3004) LEFT BP1, II/V = 270/10

VEHICLE: 2003/03 K44 AT 11/5 1980

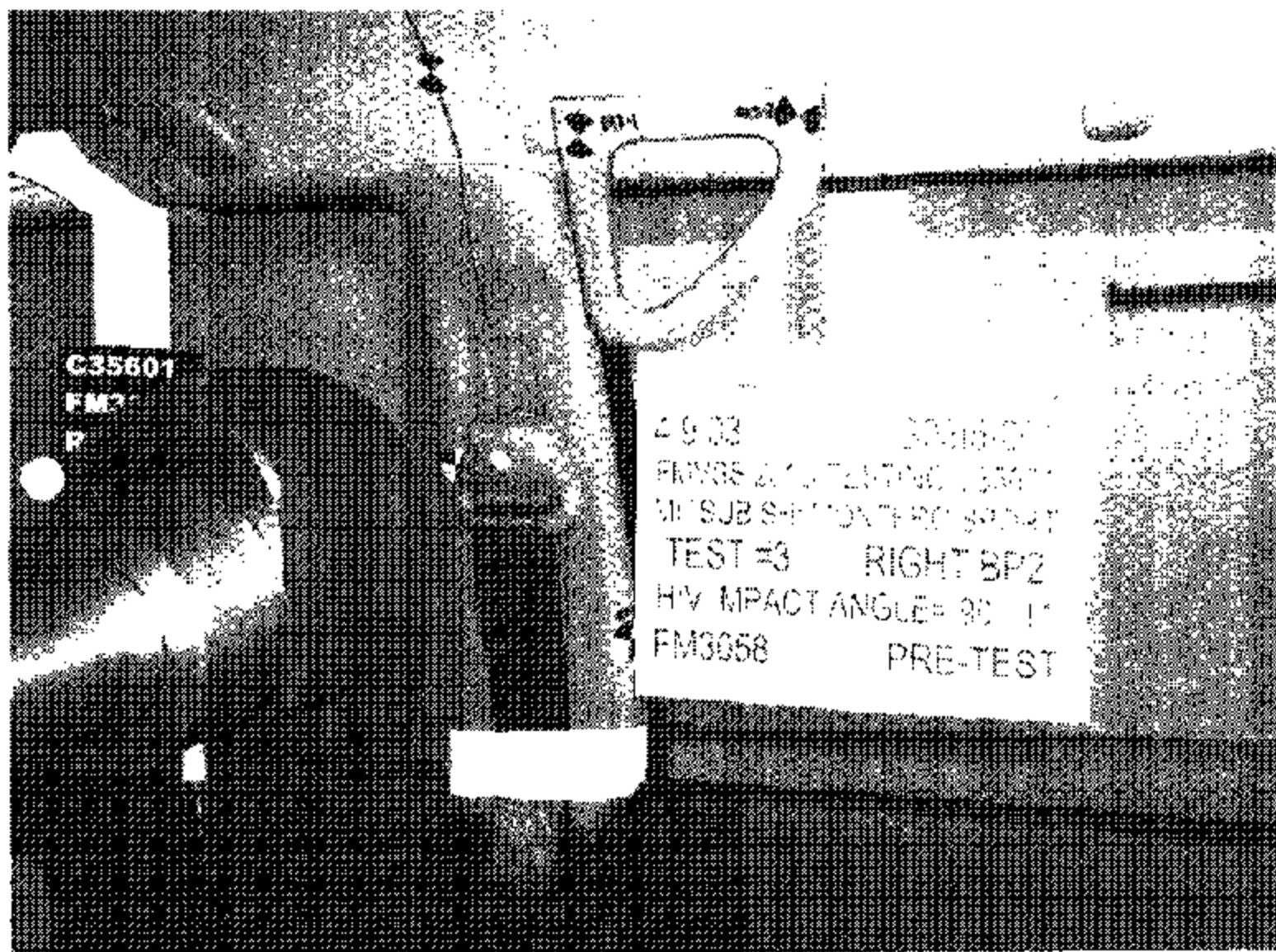
9034-21 40520 KPH AT 22.5 m/s

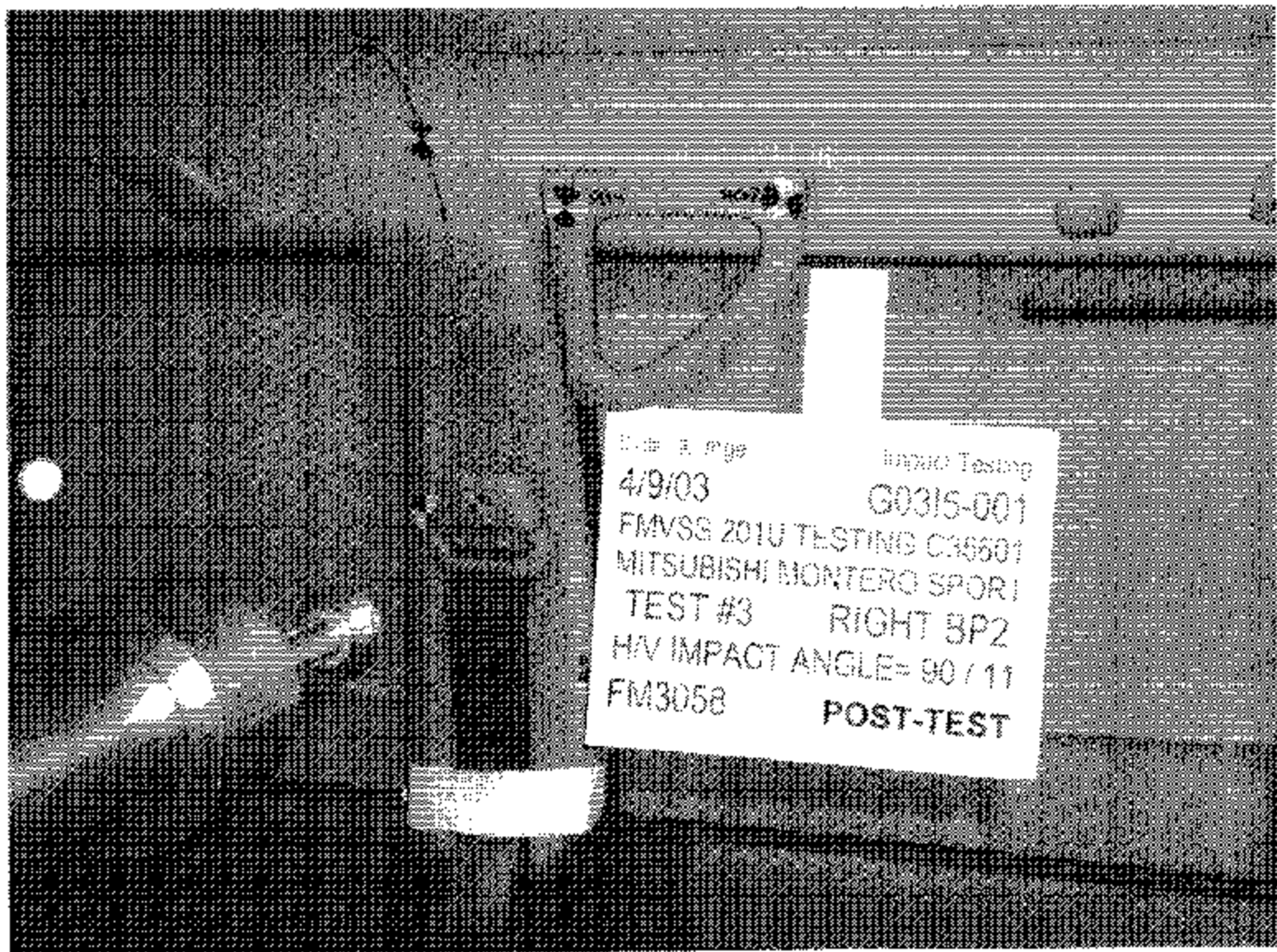
VELOCITY

CROSS F. VELOCITY KPH (m/s) AT 11/5



VEH. RESEARCH
C44 10 2003/03/27





Date: 4/9/03

Impact Testing

4/9/03

G0315-001

FMVSS 2010 TESTING C35501

MITSUBISHI MONTERO SPORT

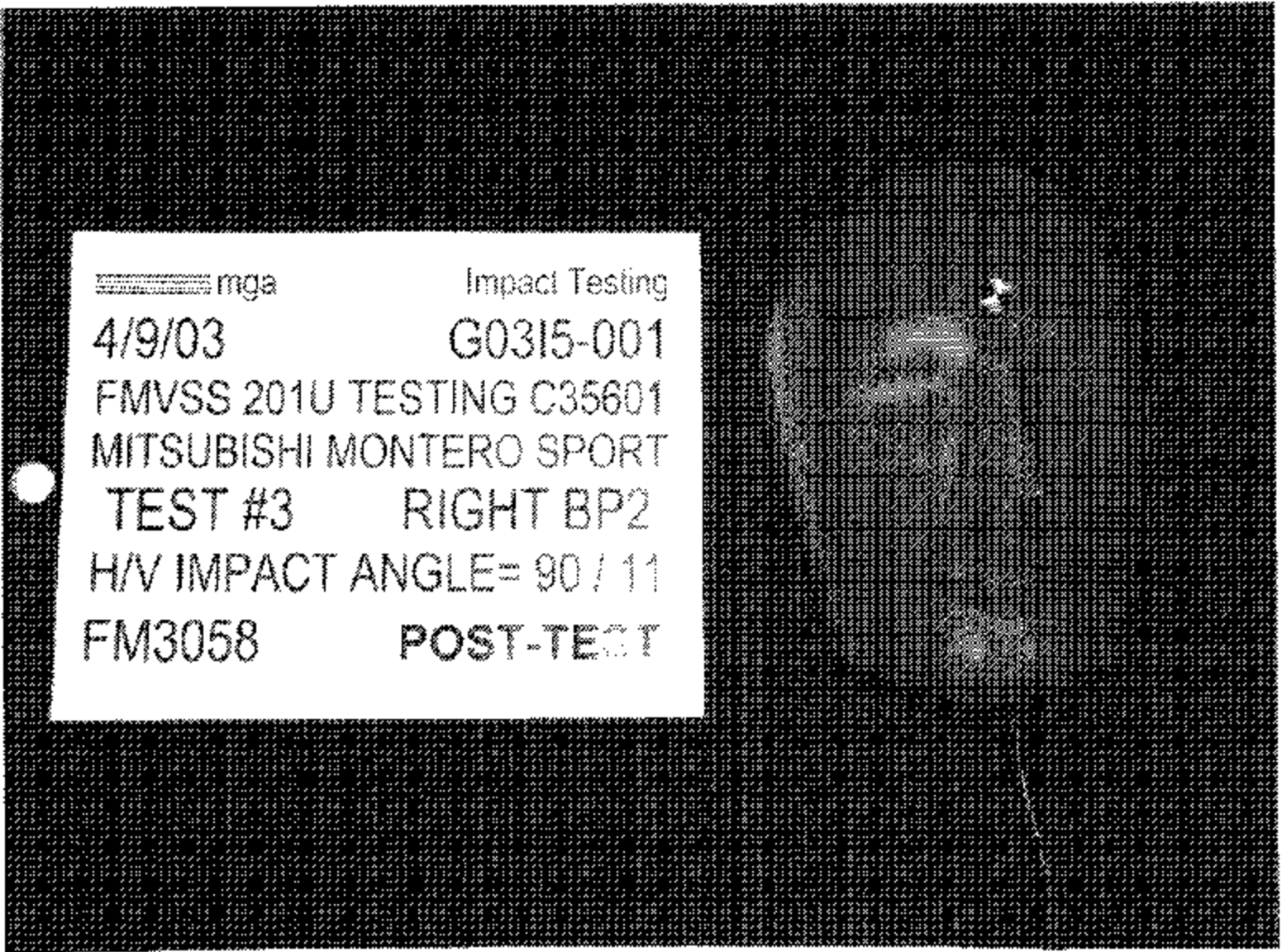
TEST #3

RIGHT BP2

H/V IMPACT ANGLE= 90 / 11

FM3058

POST-TEST



===== mga

Impact Testing

4/9/03

G03I5-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #3 RIGHT BP2

H/V IMPACT ANGLE= 90 / 11

FM3058

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP2011_FRAME #2.4

DOC. NO.: MGATP2011_FRAME #2
REVISION NO. 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO. C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTERO SPORT

GENERAL TEST PARAMETERS:

Test Number: 3

Target (Vehicle Side): left/right BPZ

Temperature: 24 °F FC

MGA Test Reference No.: FM305B

Humidity: 19 %

Approach Angles: Horizontal 90 °

Time of Test: 3:43 am/pm pm

Vertical 11 °

FMH Serial No: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>5B2</u>	<u>552</u>	<u>8.9</u>	<u>23.9</u>	<u>2</u>	<u>2</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36147</u>	<u>-108.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36143</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.9</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

THE D-RING WAS COMPRESSED

Recorded By: [Signature] Approved By: Helen D. Kalito Date: 4/9/03

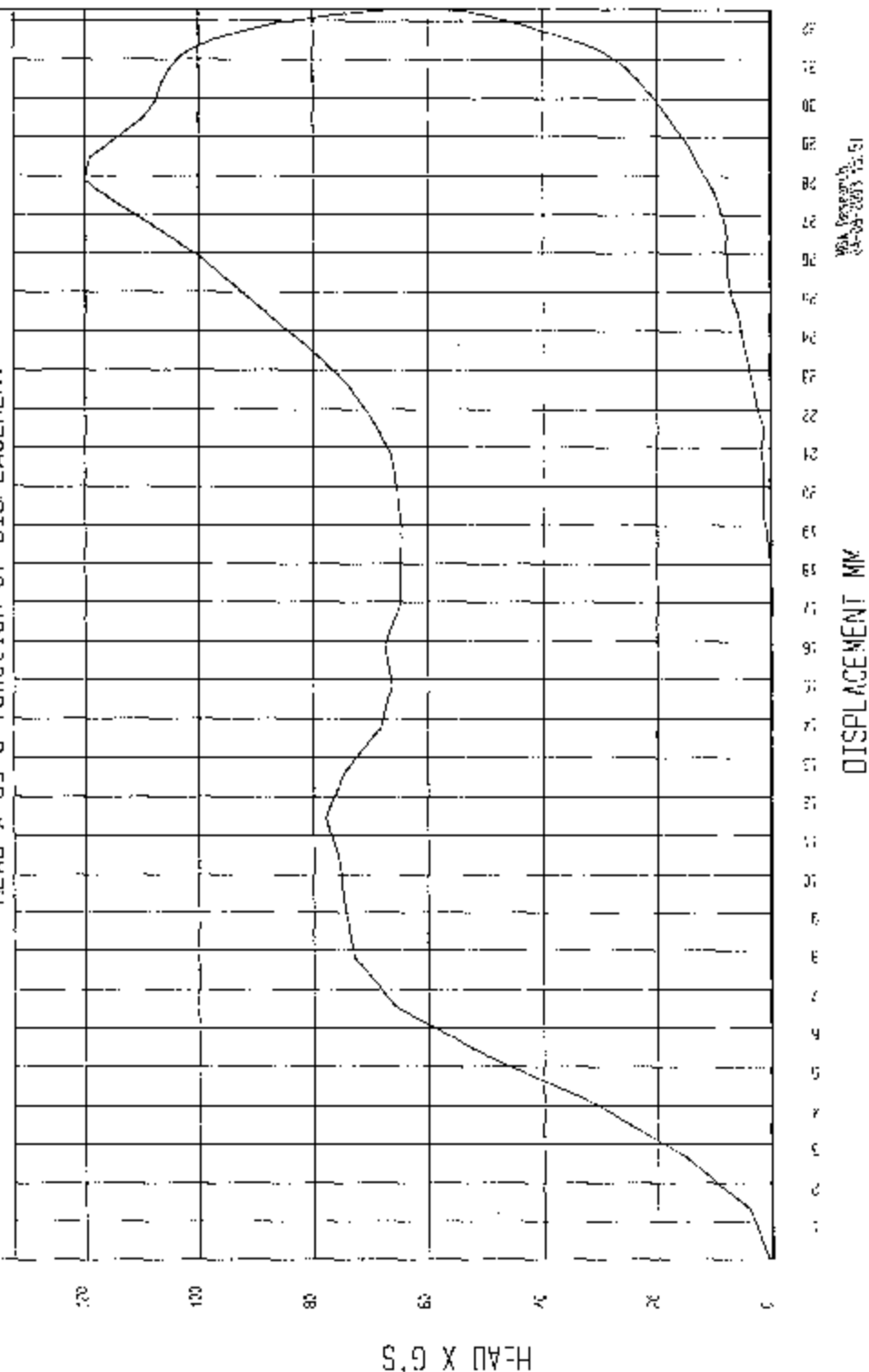
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM3058AV.A05
HIC = 551.56 calculated over 8.9 msec
T1 = .80 msec T2 = 9.70 msec
*****
HIC(d) = 582
Impact Velocity = 23.9 (km/h)
```

TEST: 2003 MITSUBISHI MONTEPO SPORT FMVSS 201U TESTING C35501 4/9/03

COMPONENT: TEST #3 (FM305B) RIGHT BP2, I/V = 90/11

HEAD X as a function of DISPLACEMENT



TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C35601 4/9/03

COMPONENT: TEST #3 (FMVSS6) RIGHT B22, H/V = 90/11

WIND: 2000000 0.5 A 5.00 TBSC

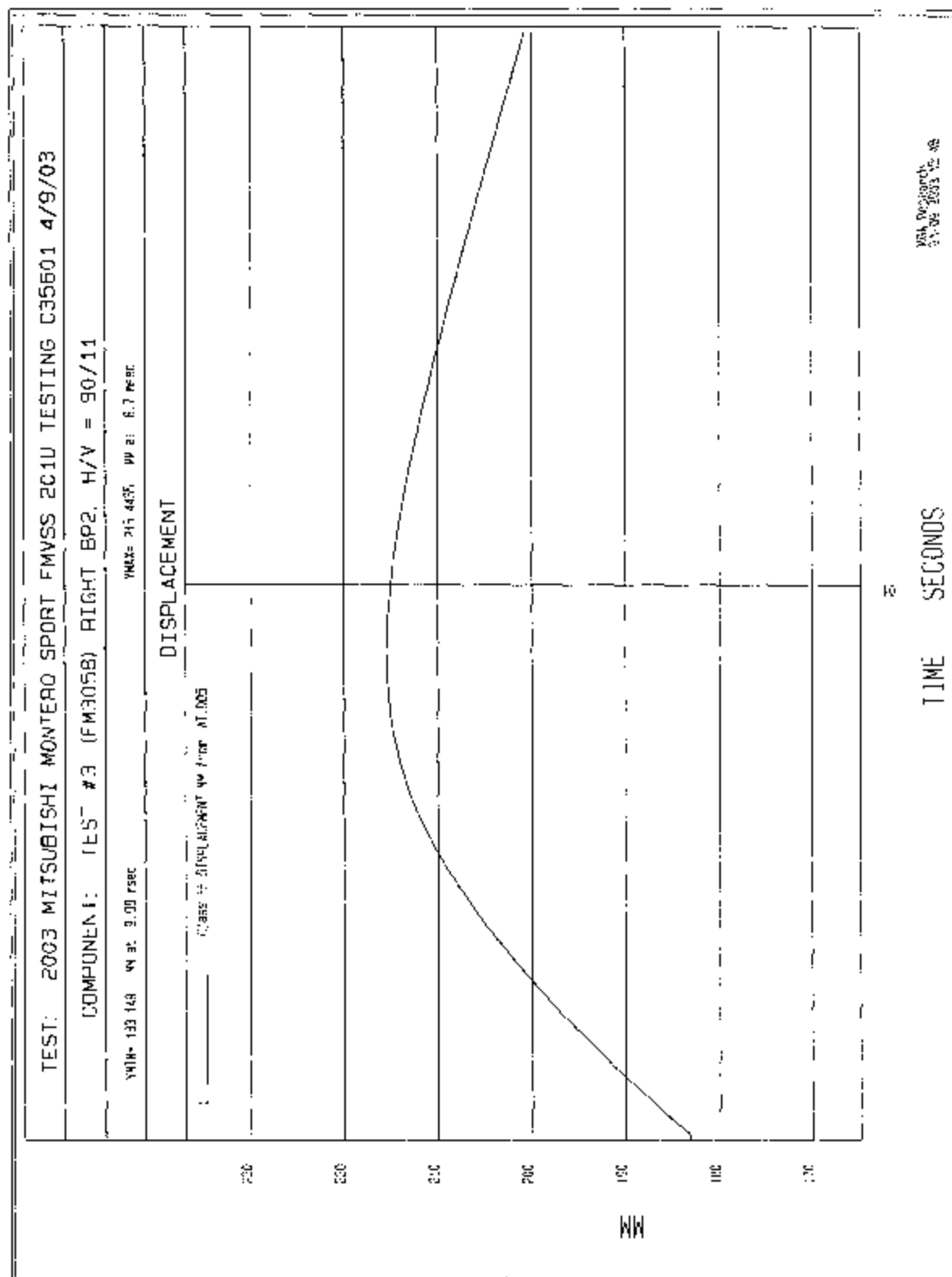
WIND: 1000000 0.5 A 5.00 TBSC

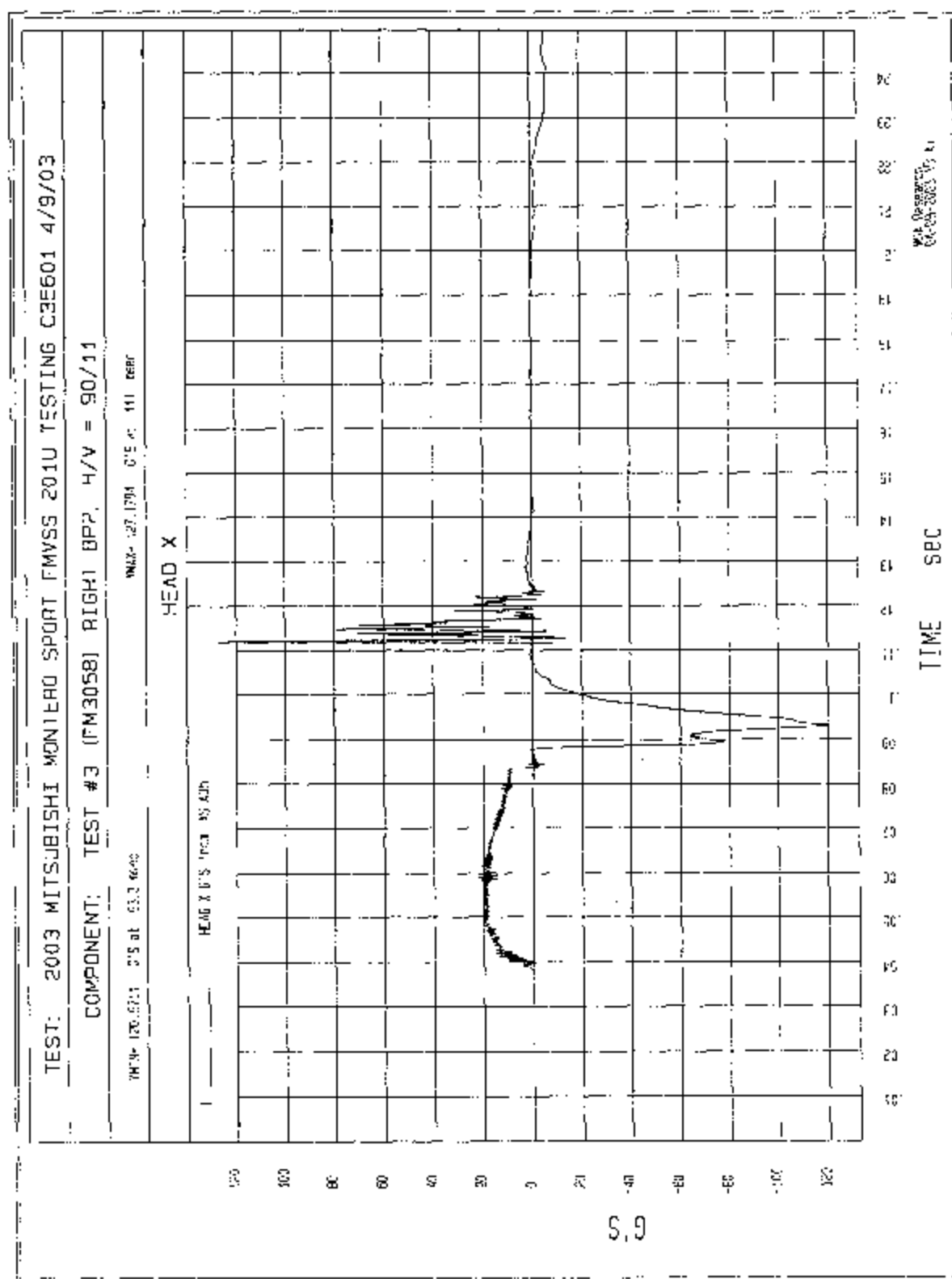
FMH RESULTANT

1 RESULTANT OF FIVE AT 205



MOA Research
04-09-2003 14:49





TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 2010 TESTING C35601 4/9/03

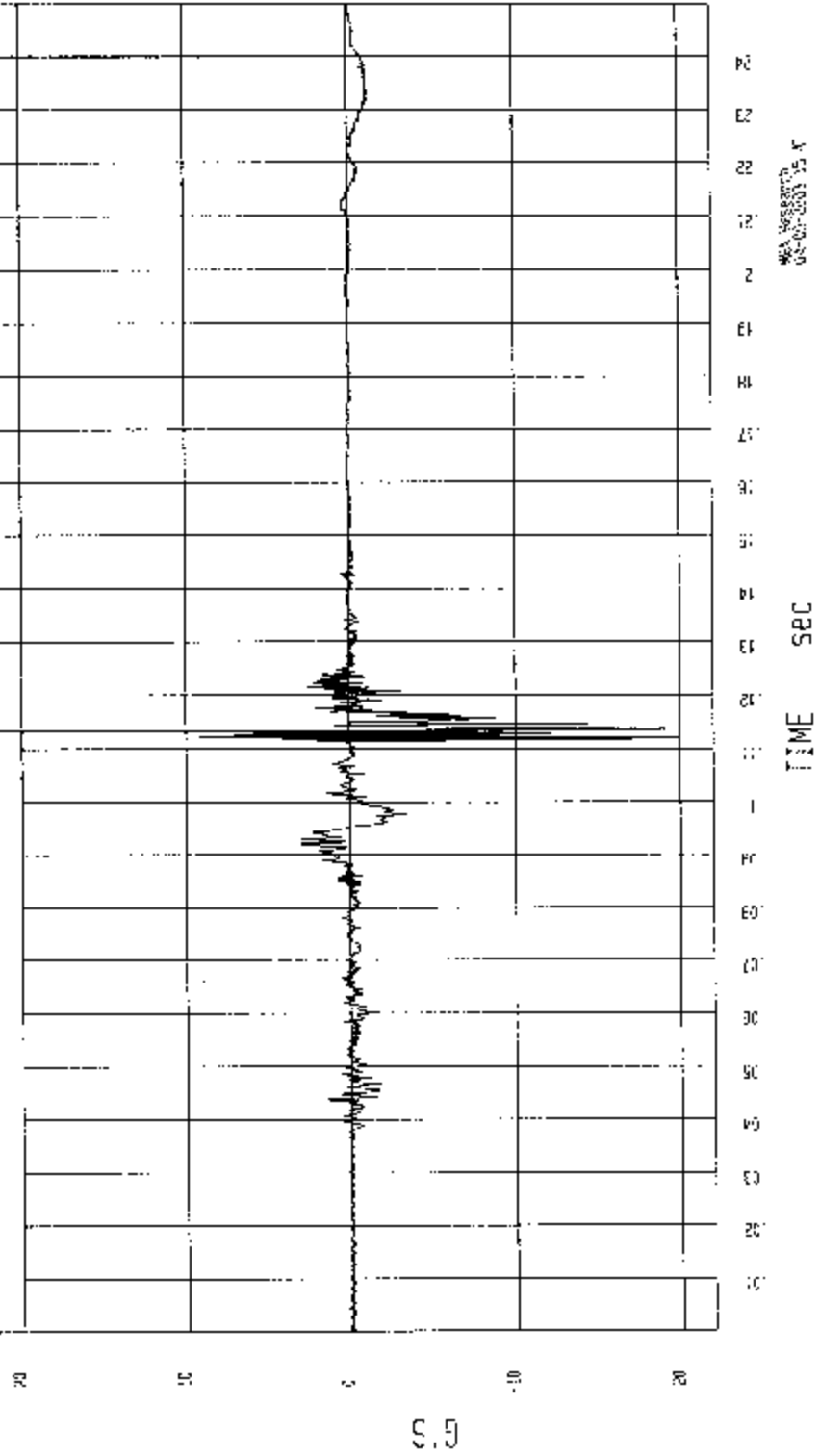
COMPONENT: TEST #3 (FM3058) RIGHT BP2, H/V = 50/11

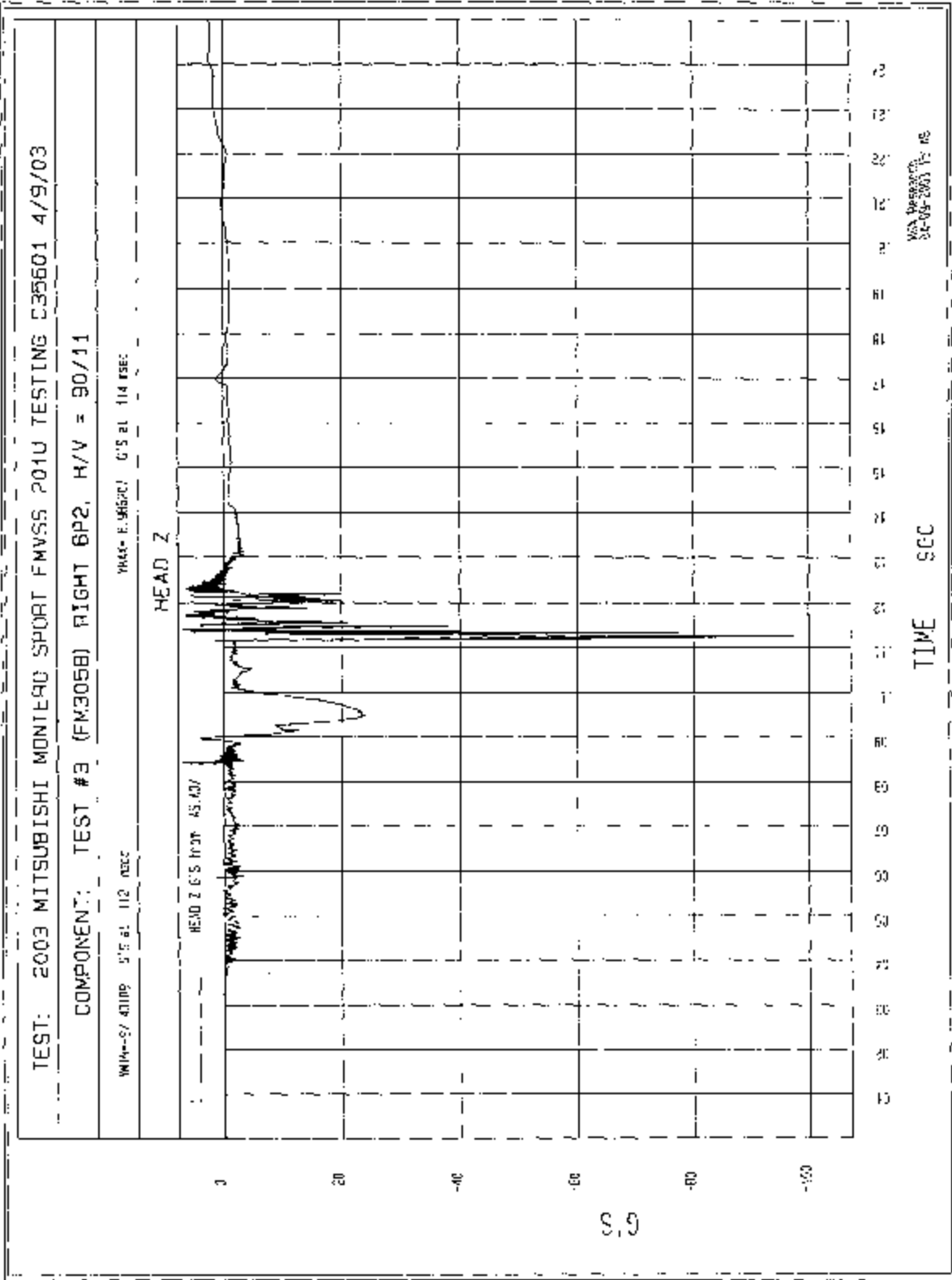
WV/N=20 0053 015 41 112 458C

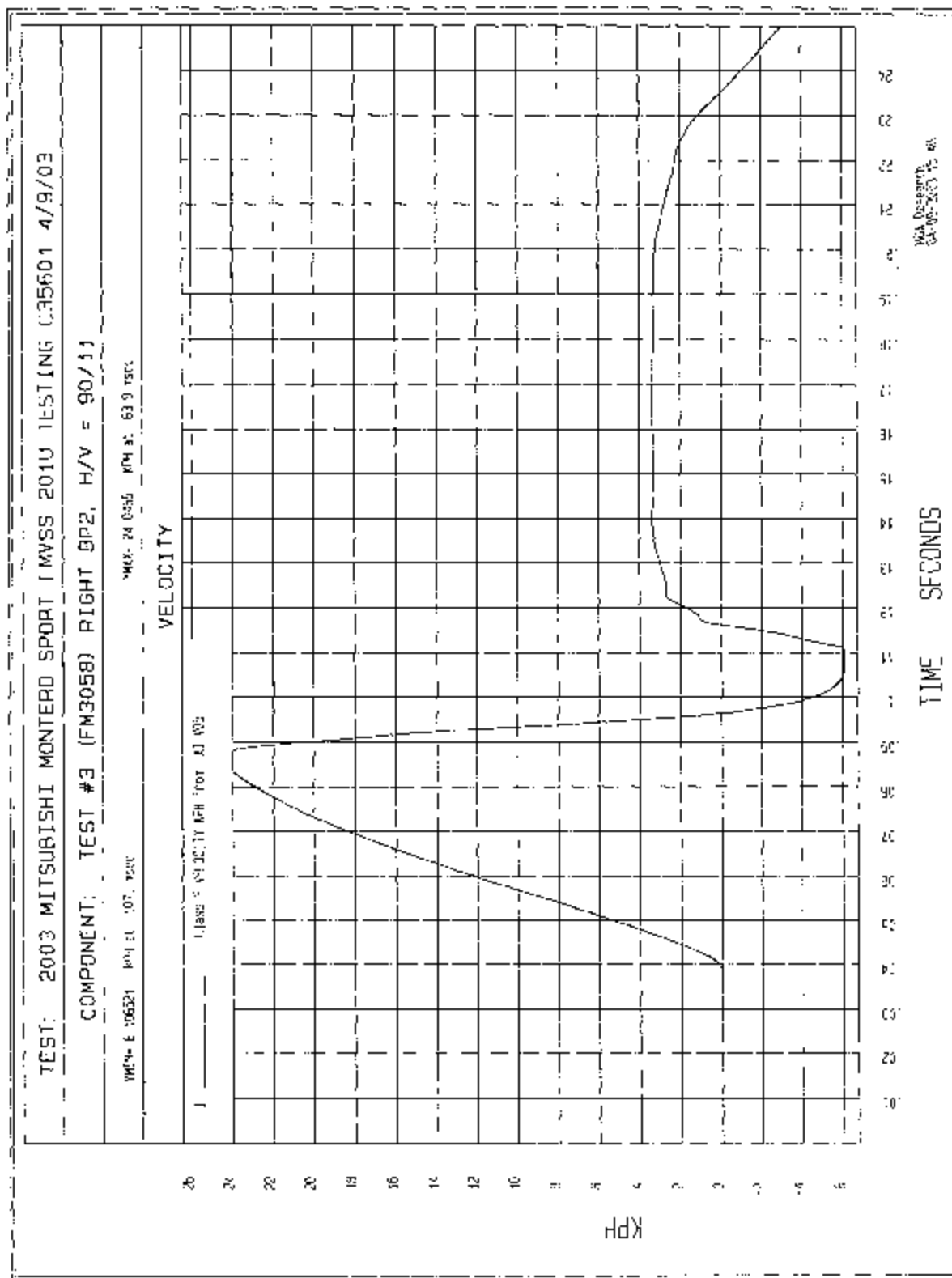
YMAX=24.33769 015 41 113 385C

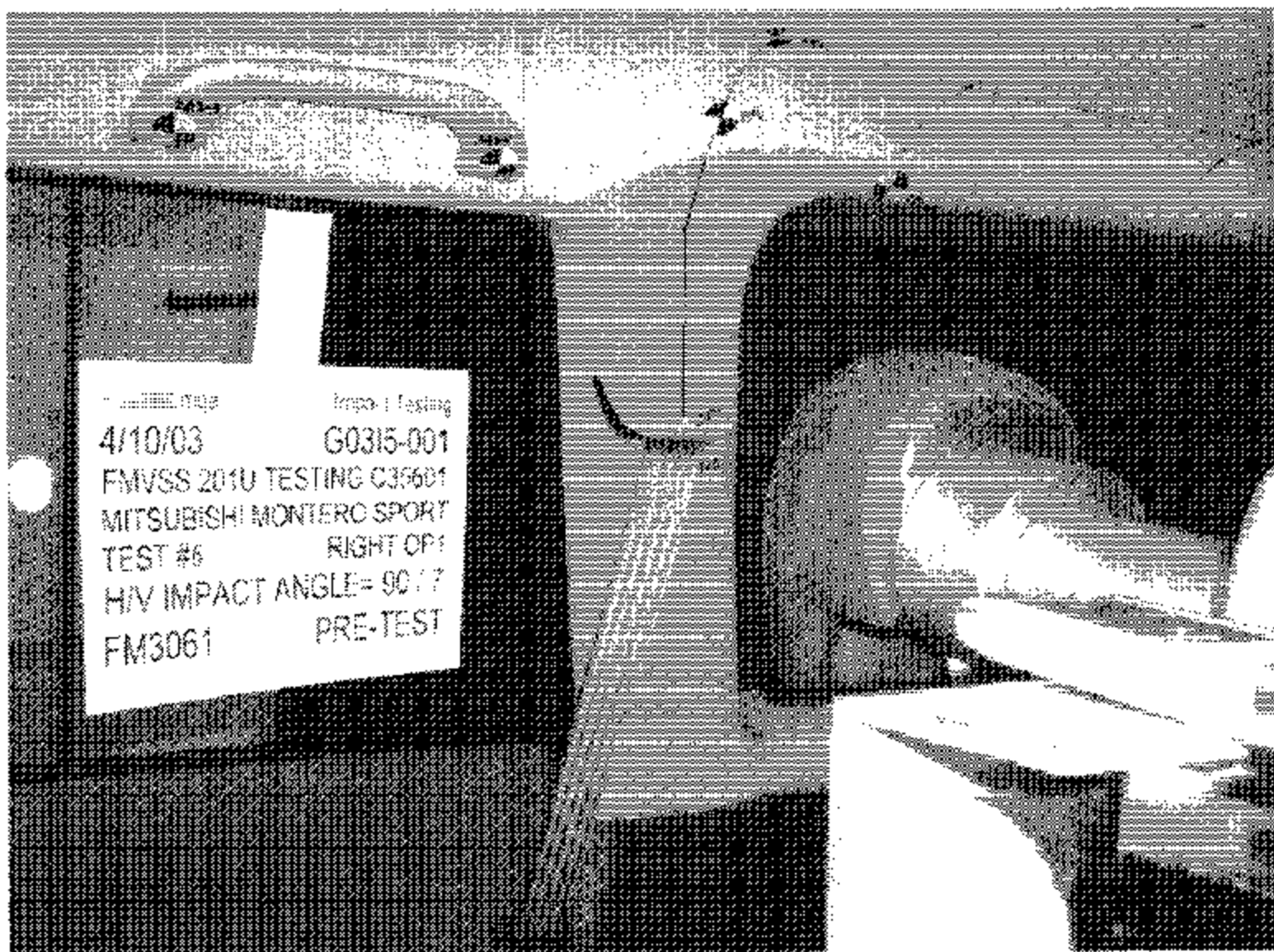
HEAD Y

HEAD Y 015 41 113 385C

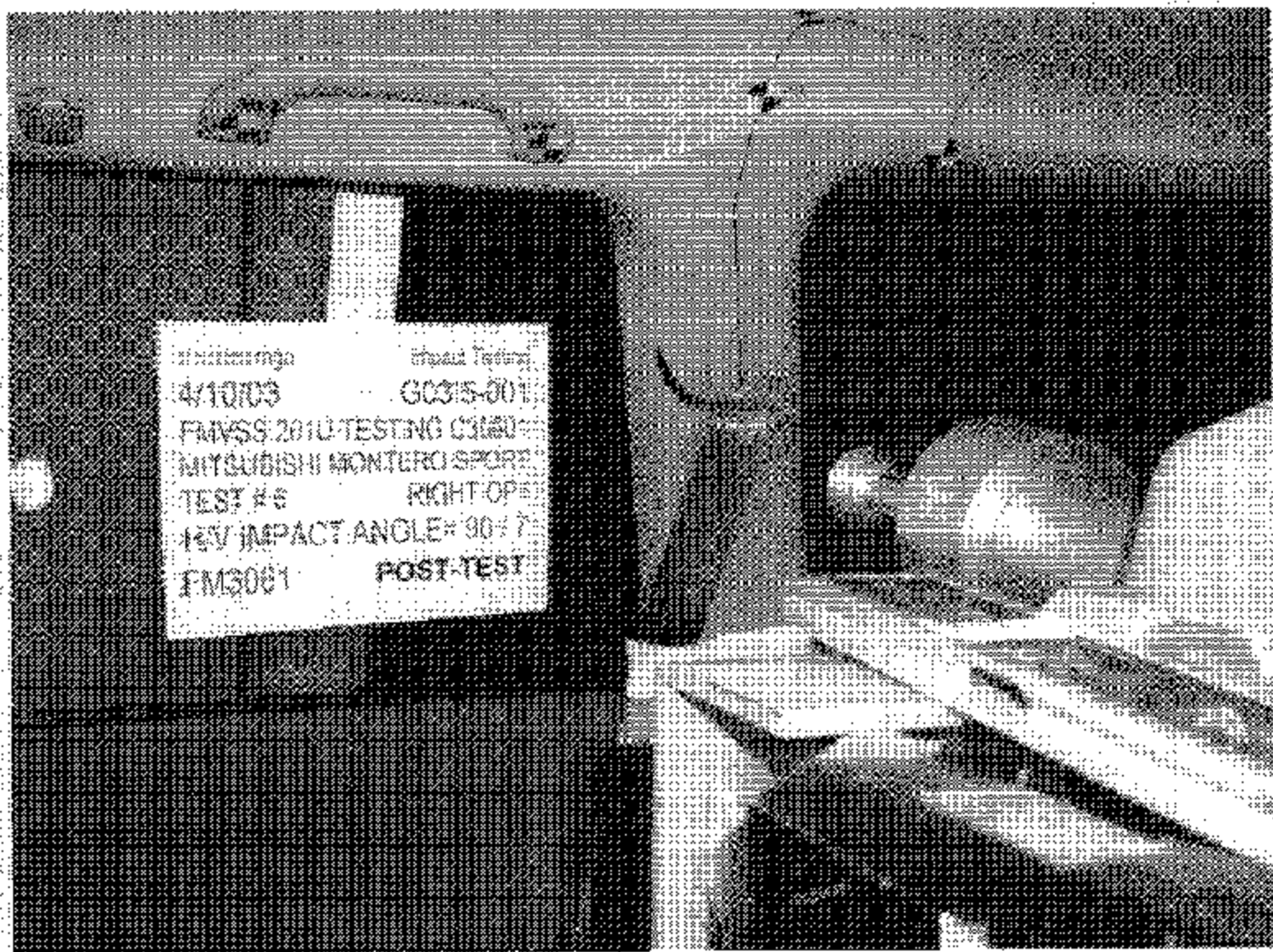








4/10/03
FMVSS 2010 TESTING C3120
MITSUBISHI MONTERO SPORT
TEST #5 RIGHT SIDE
15V IMPACT ANGLE= 90°
FM3061 POST-TEST



mga

Impact Testing

4/10/03

G03I5-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #6

RIGHT OP1

H/V IMPACT ANGLE= 90 / 7

FM3061

POST-TEST



MICHIGAN OPERATIONS
 DATE: 3/26/03
 SUPERCEDES: MCIATP201U, FRAME #2.4

DOC NO: MCIATP201U, FRAME #2
 REVISION NO: 5
 PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTERO SPORT

GENERAL TEST PARAMETERS:

Test Number: 6

Target (Vehicle Side): left right OP1

Temperature: 23 °F FGD

MGA Test Reference No.: FA3061

Humidity: 19 %

Approach Angles: Horizontal 90 °

Time of Test: 10:00 am pm

Vertical 7 °

FMH Serial No: 33

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>4/6</u>	<u>331</u>	<u>6.5</u>	<u>23.9</u>	<u>17</u>	<u>2</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36197</u>	<u>-108.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36553</u>	<u>97.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helena D. Kalita Date: 4/10/03

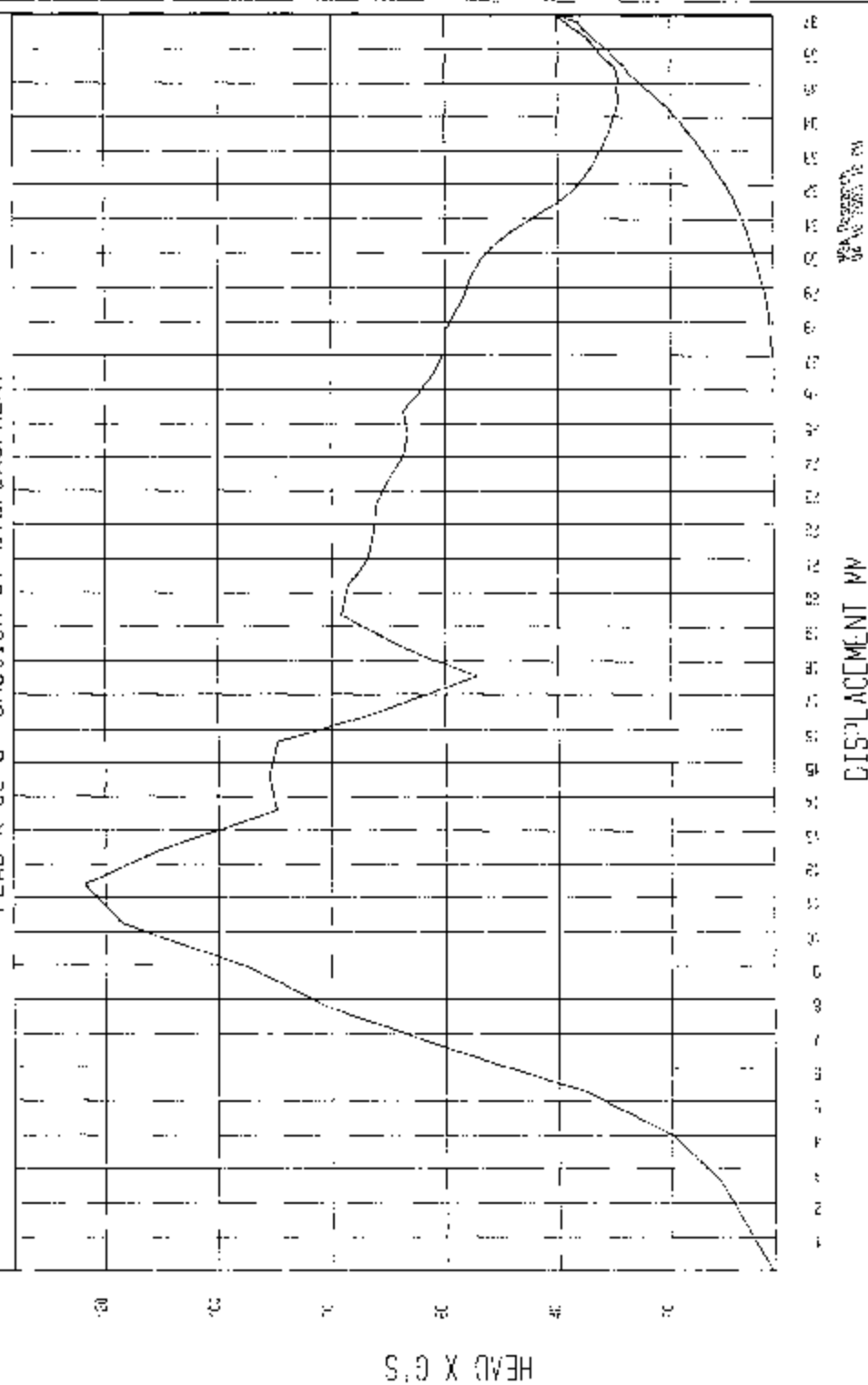
*Only necessary for NHTSA (Government) Compliance testing.

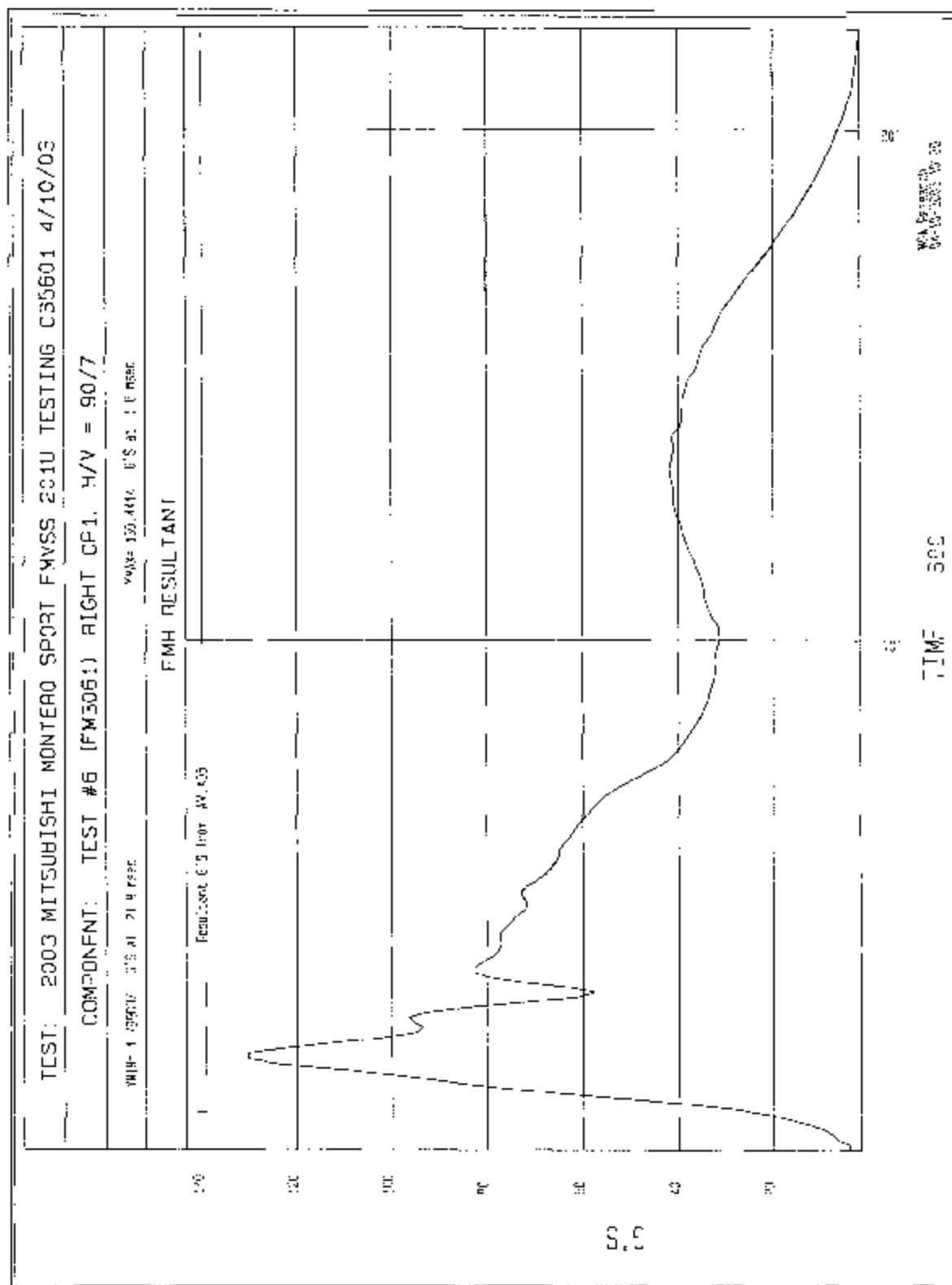
```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NETSA\FM3061AV.A05
the hic = 330.61 calculated over 6.5 msec
T1 = .90 msec T2 = 7.40 msec
*****
HIC(d) = 416
Impact Velocity = 23.9 (km/h)
```

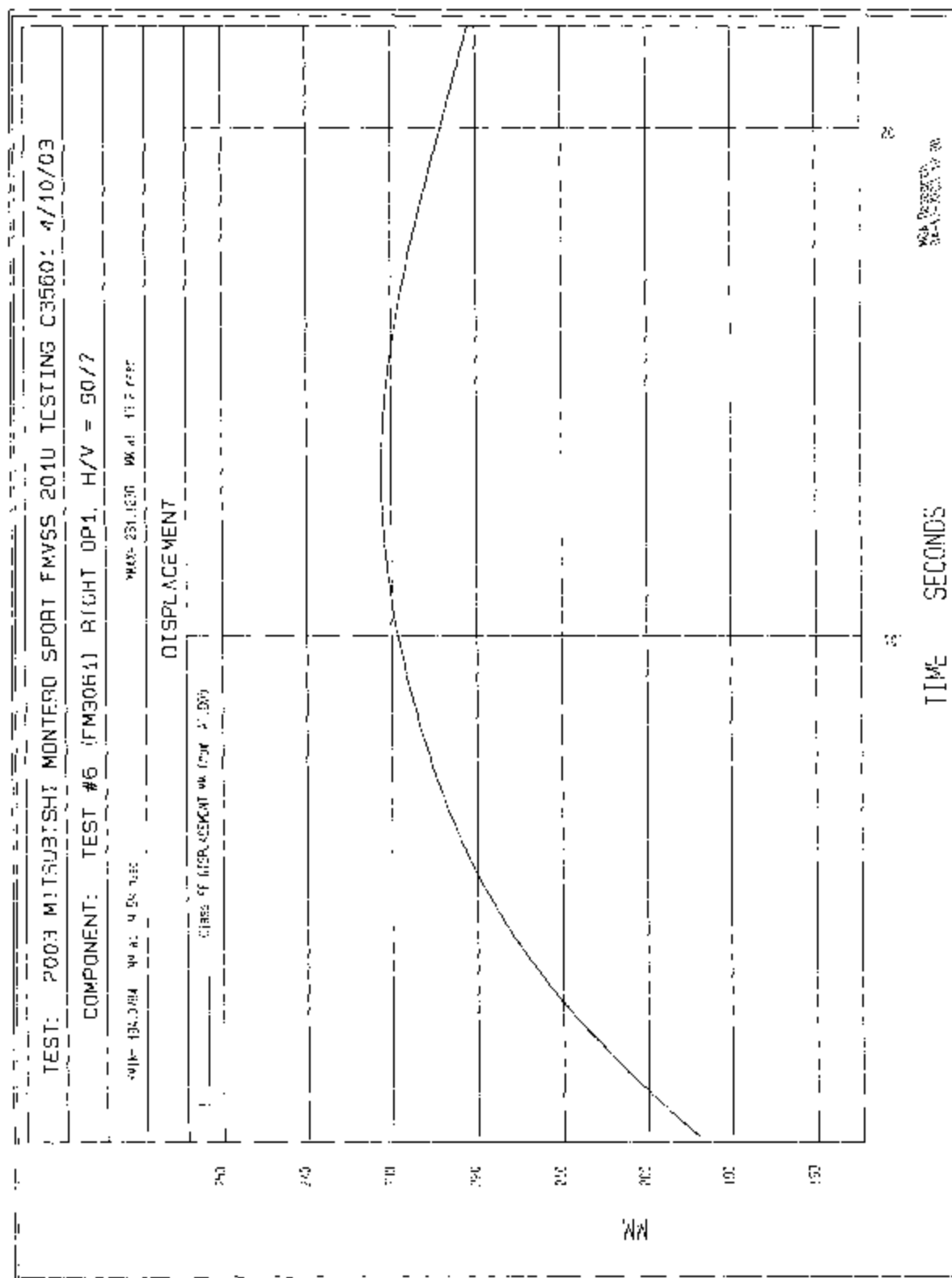
TEST: 2003 MLI/NIGHTSHT MONTEPO SPORT FMVSS 201U TESTING C3560: 4/10/03

COMPONENT: TEST #6 (FM3061) RIGHT DP1. H/V = 90//

HEAD X as a function of DISPLACEMENT







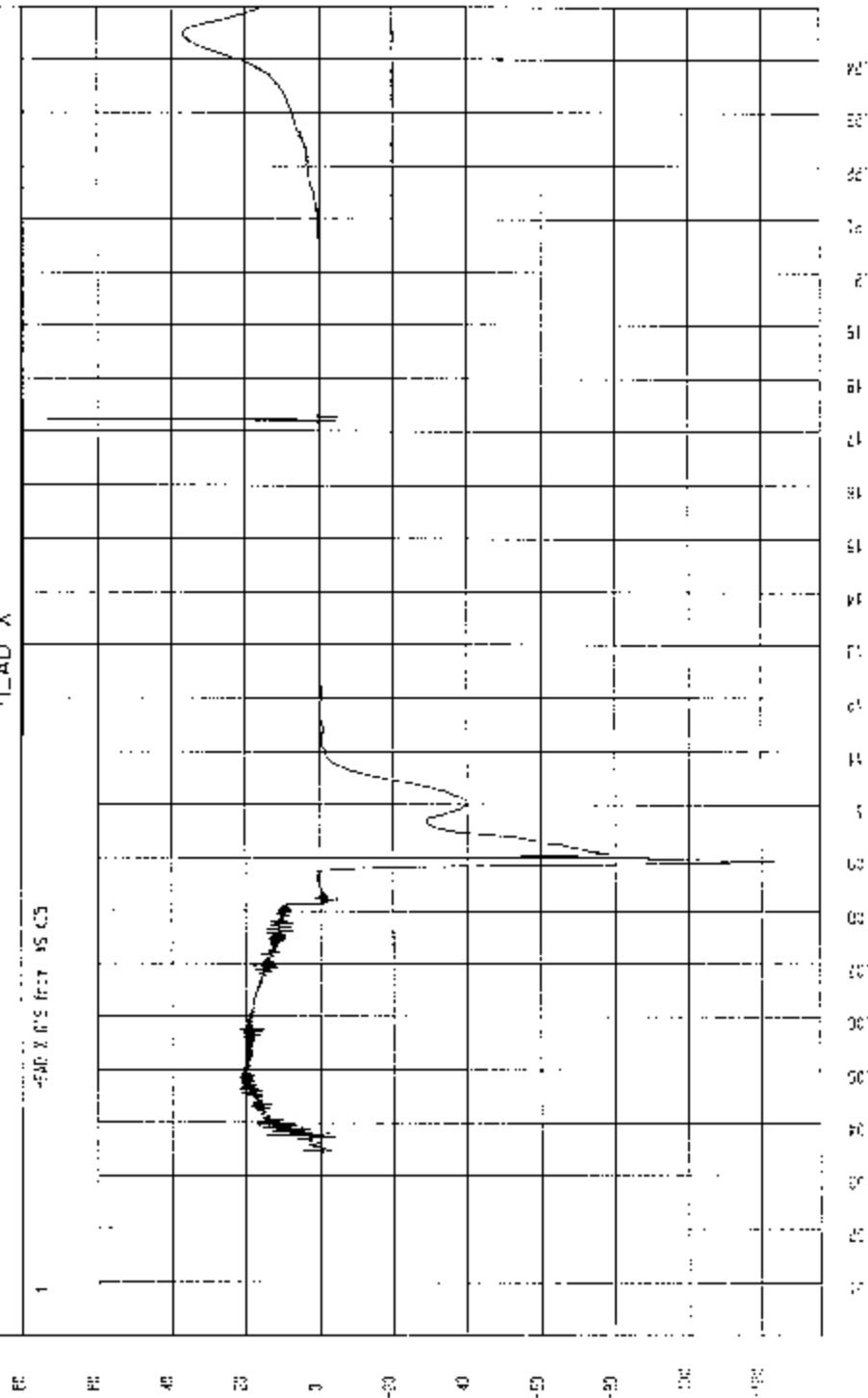
TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 2010 TESTING C35601 4/10/03

COMPONENT: TEST #6 (FM3061) RIGHT CP1, H/V = 90/7

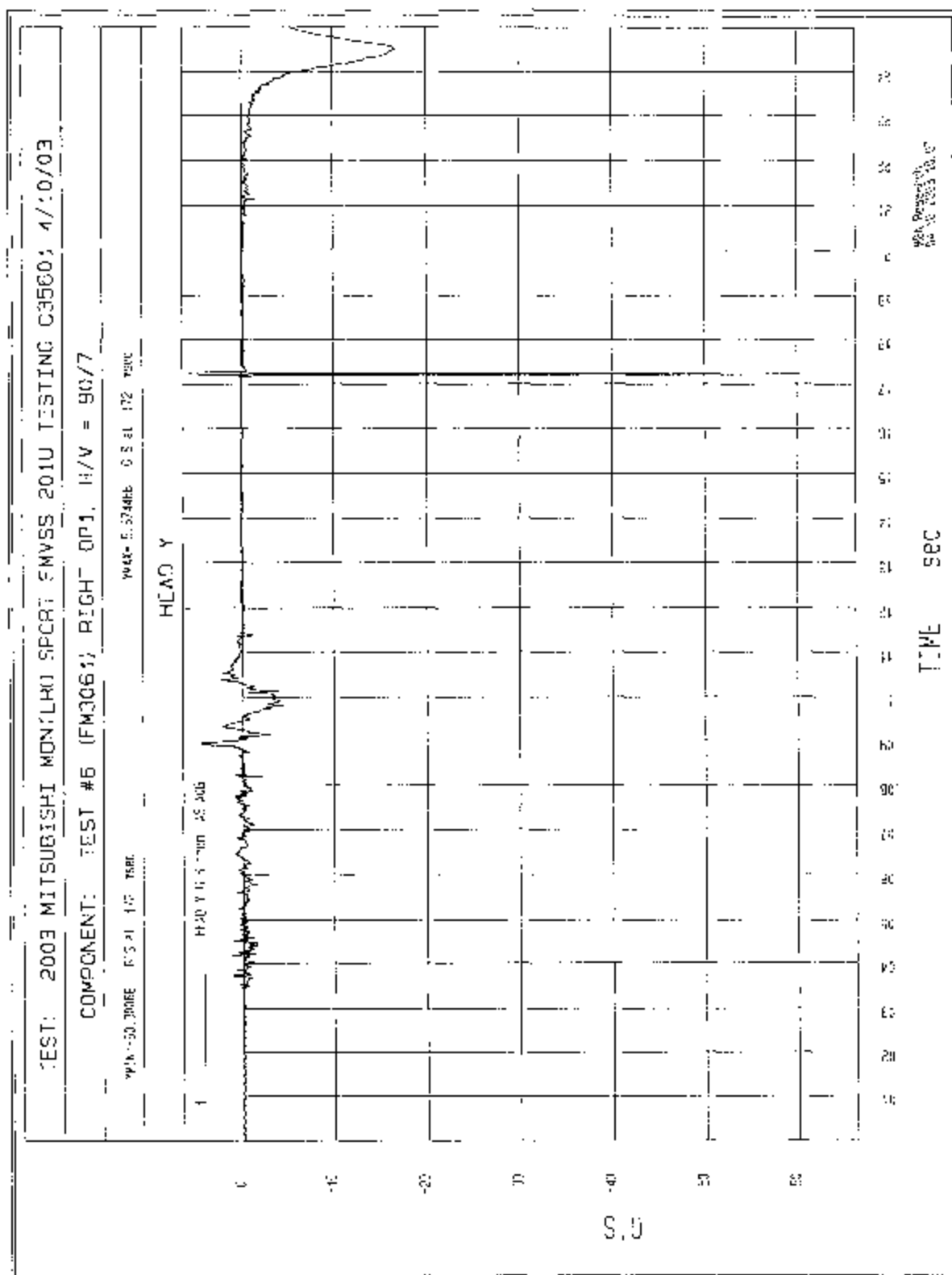
4010-121.5612 0.5 at 95.2 m/s

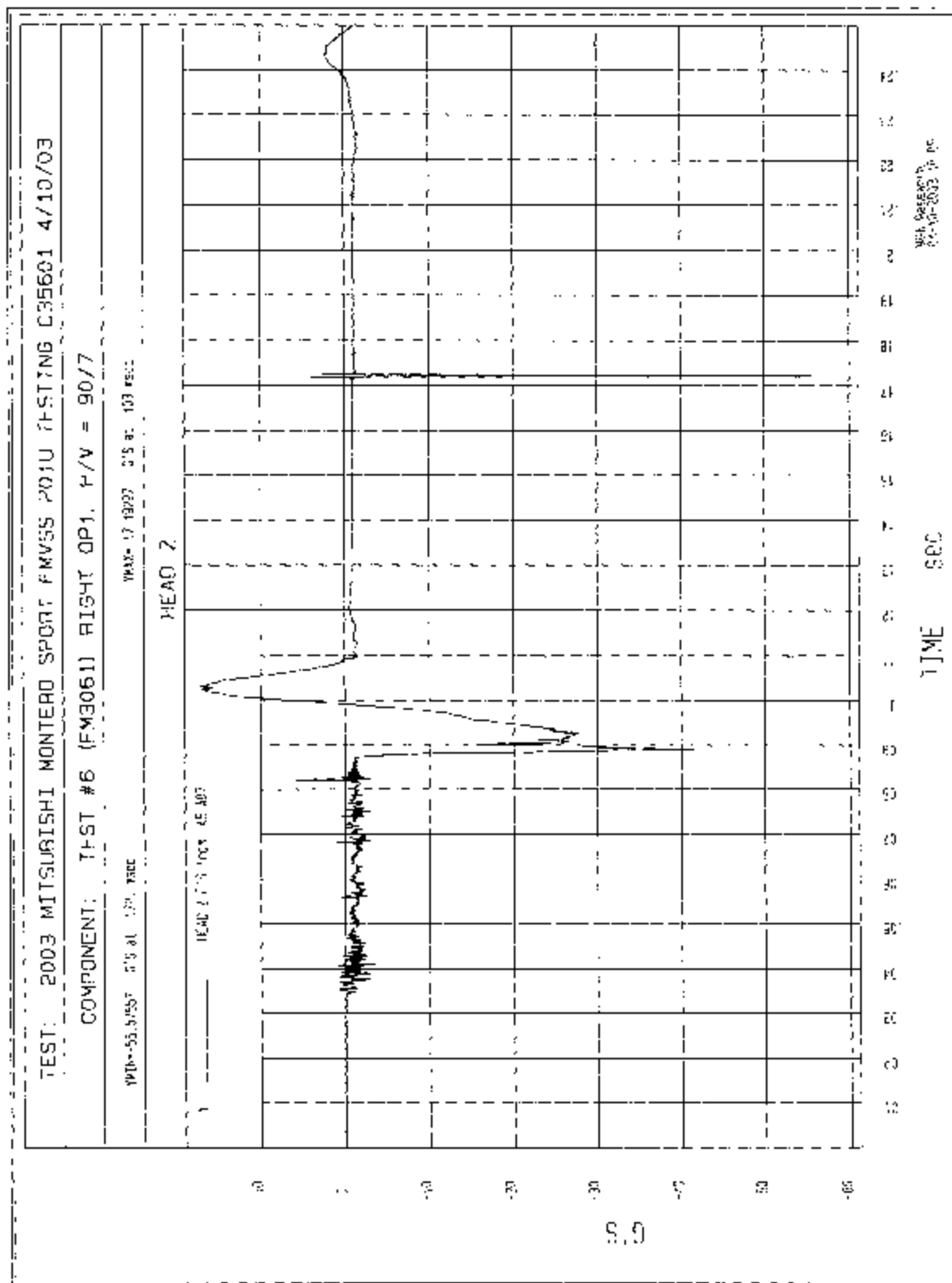
9020-71 14602 1.5 at 117 m/s

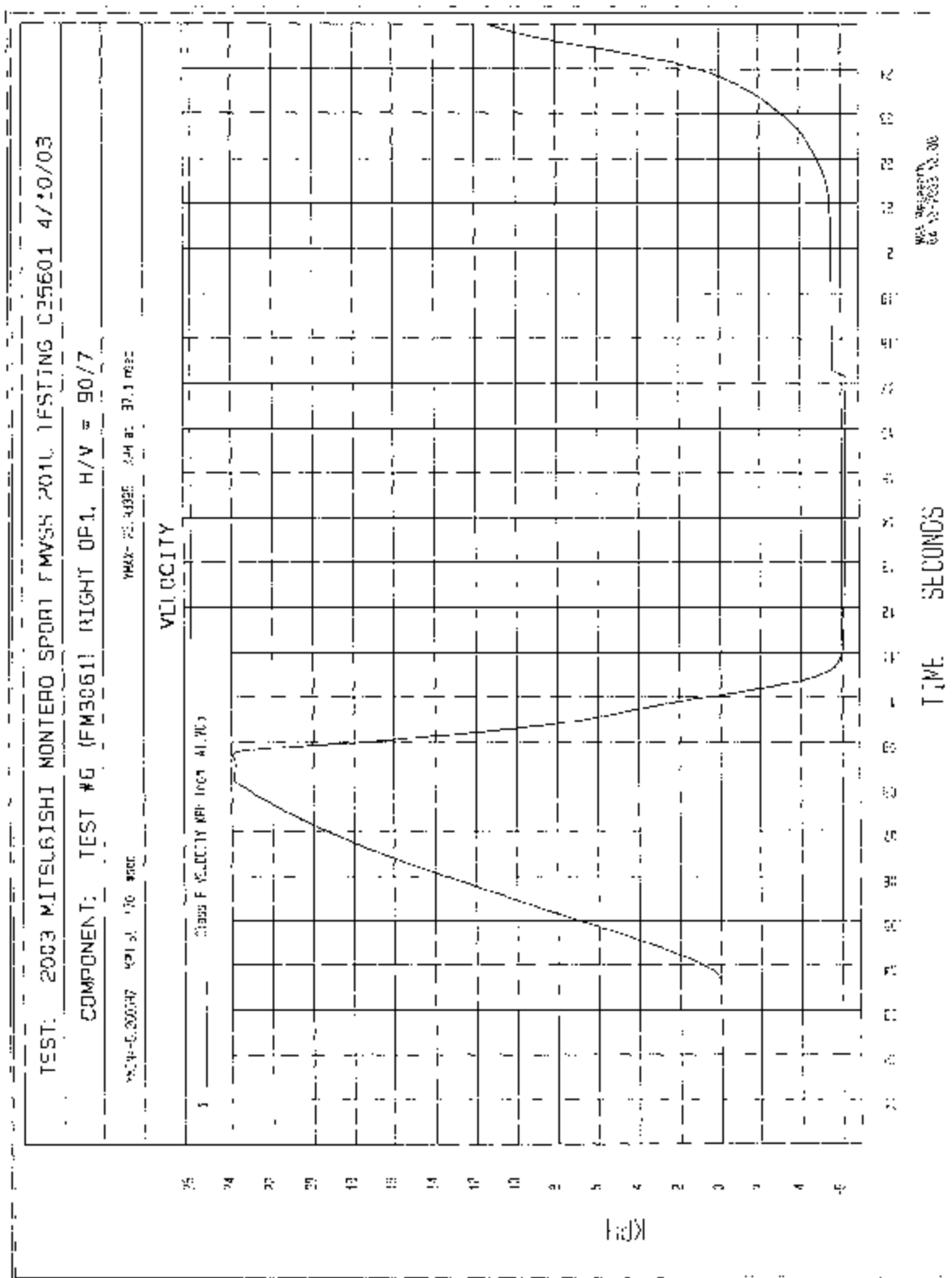
LEAD X

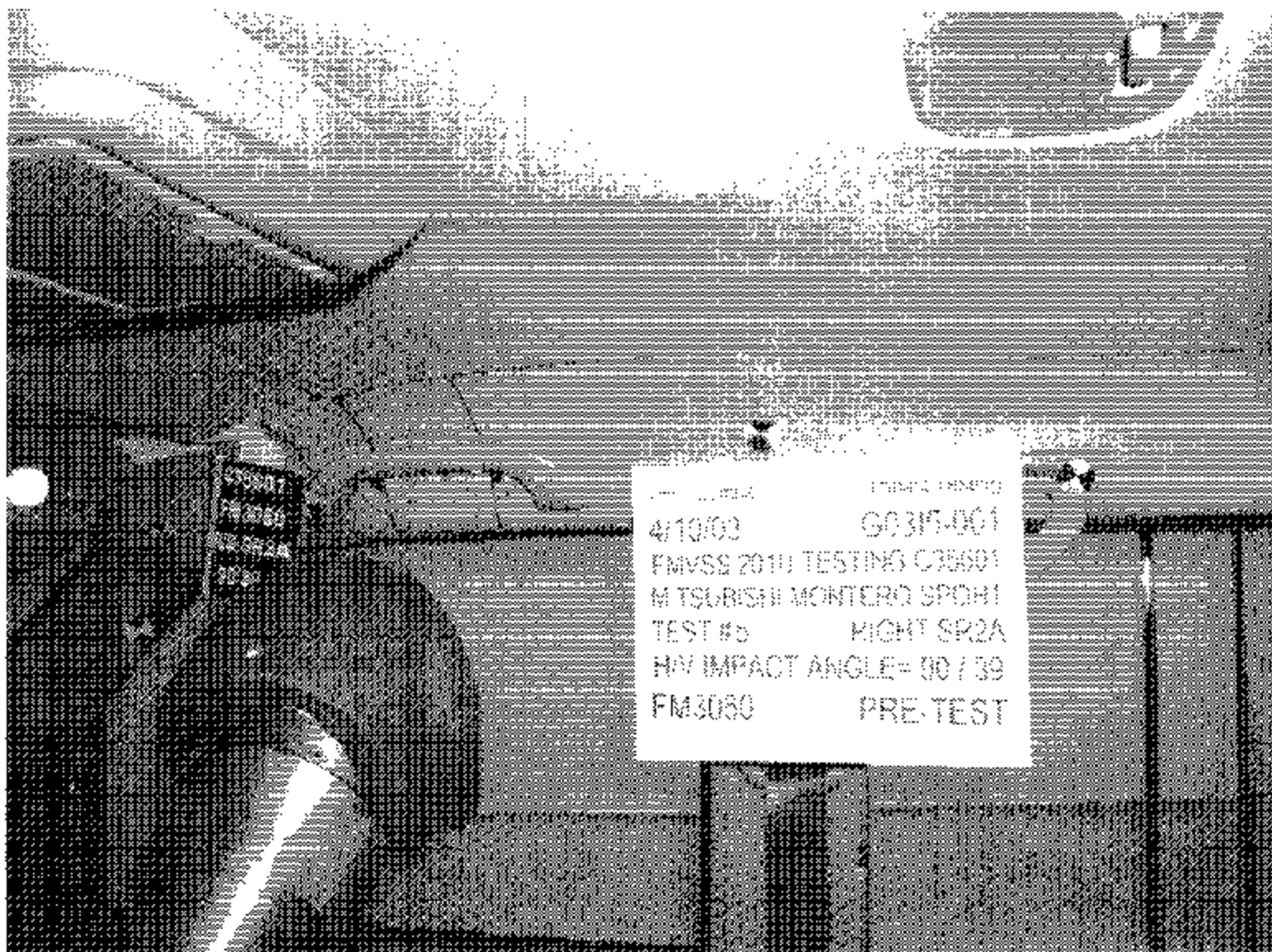


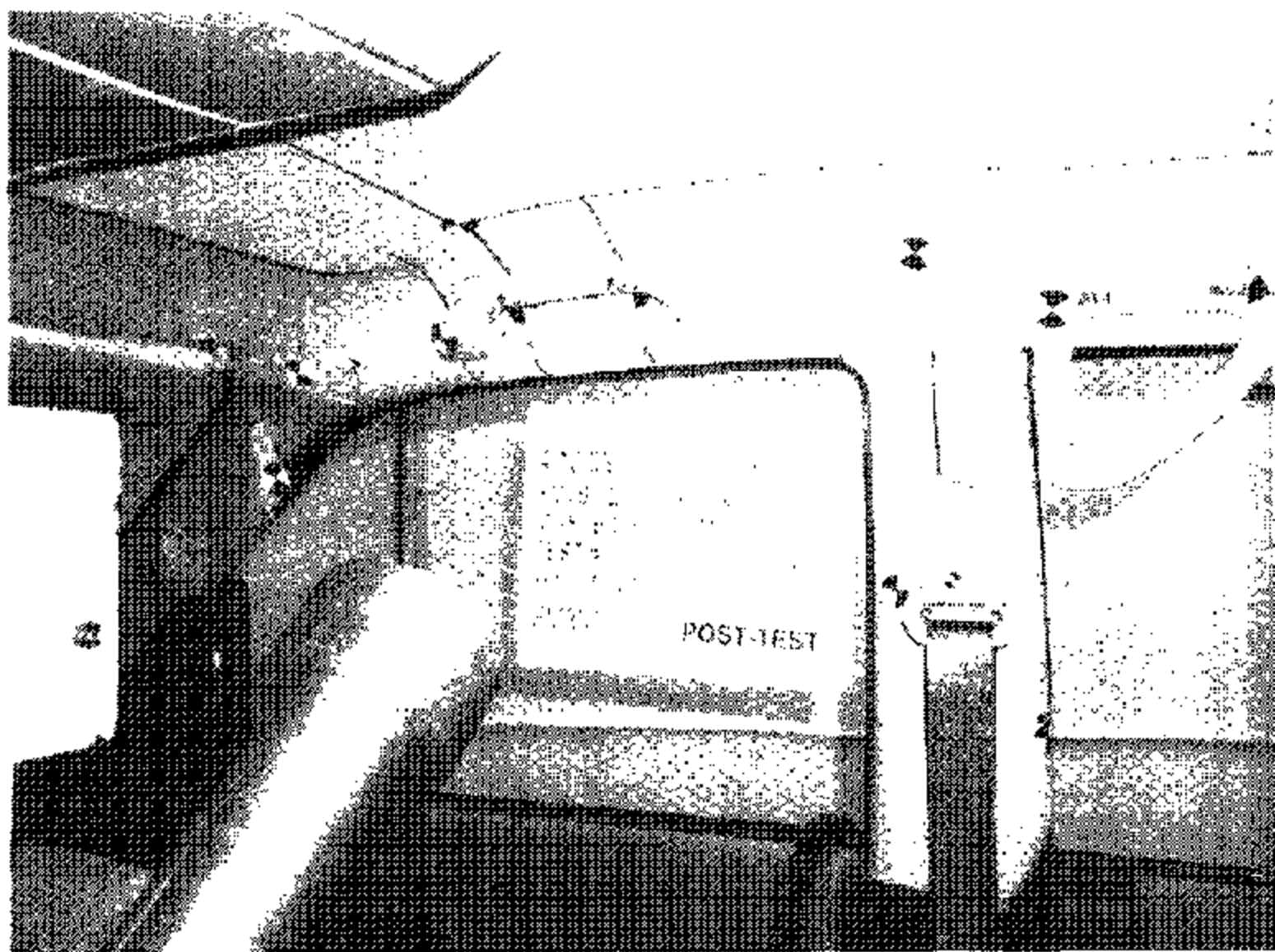
WIA TEST REPORT
03-10-2003 10:07











mga

Impact Testing

4/10/03

G0315-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #5 RIGHT SR2A

H/V IMPACT ANGLE= 90 / 39

FM3060

POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2 4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO. 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: CBS601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI INVENTOR
SPORT CS

GENERAL TEST PARAMETERS:

Test Number: 5

Target (Vehicle Side): left (right) 5122A

Temperature: 73 °F (EC)

MGA Test Reference No.: FM3060

Humidity: 17 %

Approach Angles Horizontal 90 °

Time of Test: 9:25 (amp)

Vertical 39 °

FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>738</u>	<u>757</u>	<u>82</u>	<u>23.4</u>	<u>3</u>	<u>1</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35923</u>	<u>-100.9</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35916</u>	<u>100.7</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35919</u>	<u>100.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

SIDE RAIL WAS COMPRESSED

Recorded By: [Signature] Approved By: [Signature] Date: 4/10/03

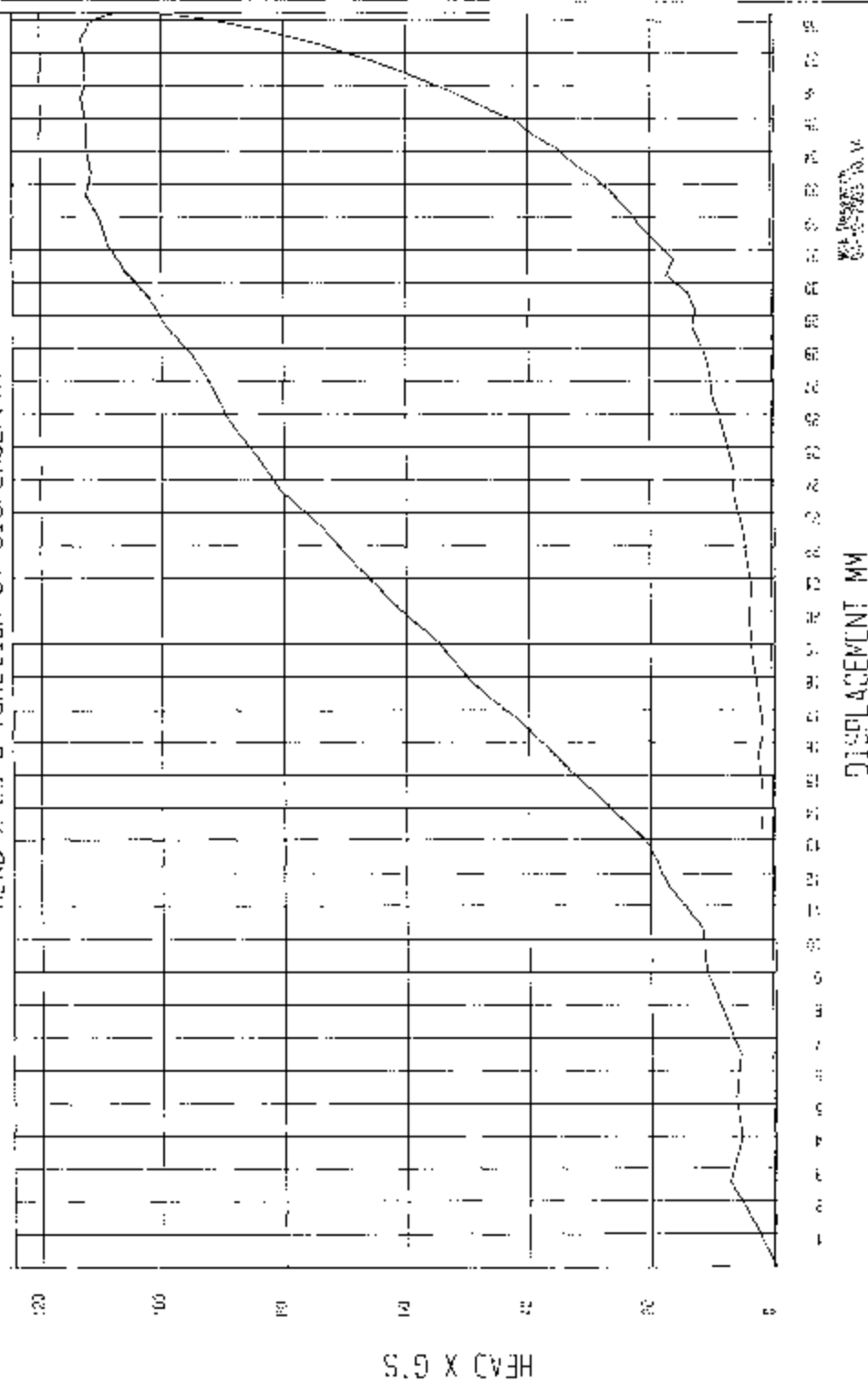
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NH7SA\FM3060AV.AC5
1  HIC = 757.12 calculated over 8.2 msec
T1 = 3.00 msec T2 = 11.20 msec
*****
HIC(d) = 738
Impact velocity = 23.4 (km/h)
```

TEST: 2003 MITSUBISHI MONTERO SPORT -MVSS 2010 TESTING C35601 4/10/03

COMPONENT: TEST #5 (FM3050) RIGHT SR2A, II/V - 90/39

HEAD X as a function of DISPLACEMENT



TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201U TESTING C35601 4/10/03

COMPONENT: TEST #5 (FM3060) RIGHT SH2A, H/V - 90/39

Wt/Wt: 450/430 515 at 3.0 sec

Wt/Wt: 112 5.79 0.5 at 3.0 sec

FMH RESULTANT

1 Resultant: 61.5 10.25 49.405

100

100

80

60

40

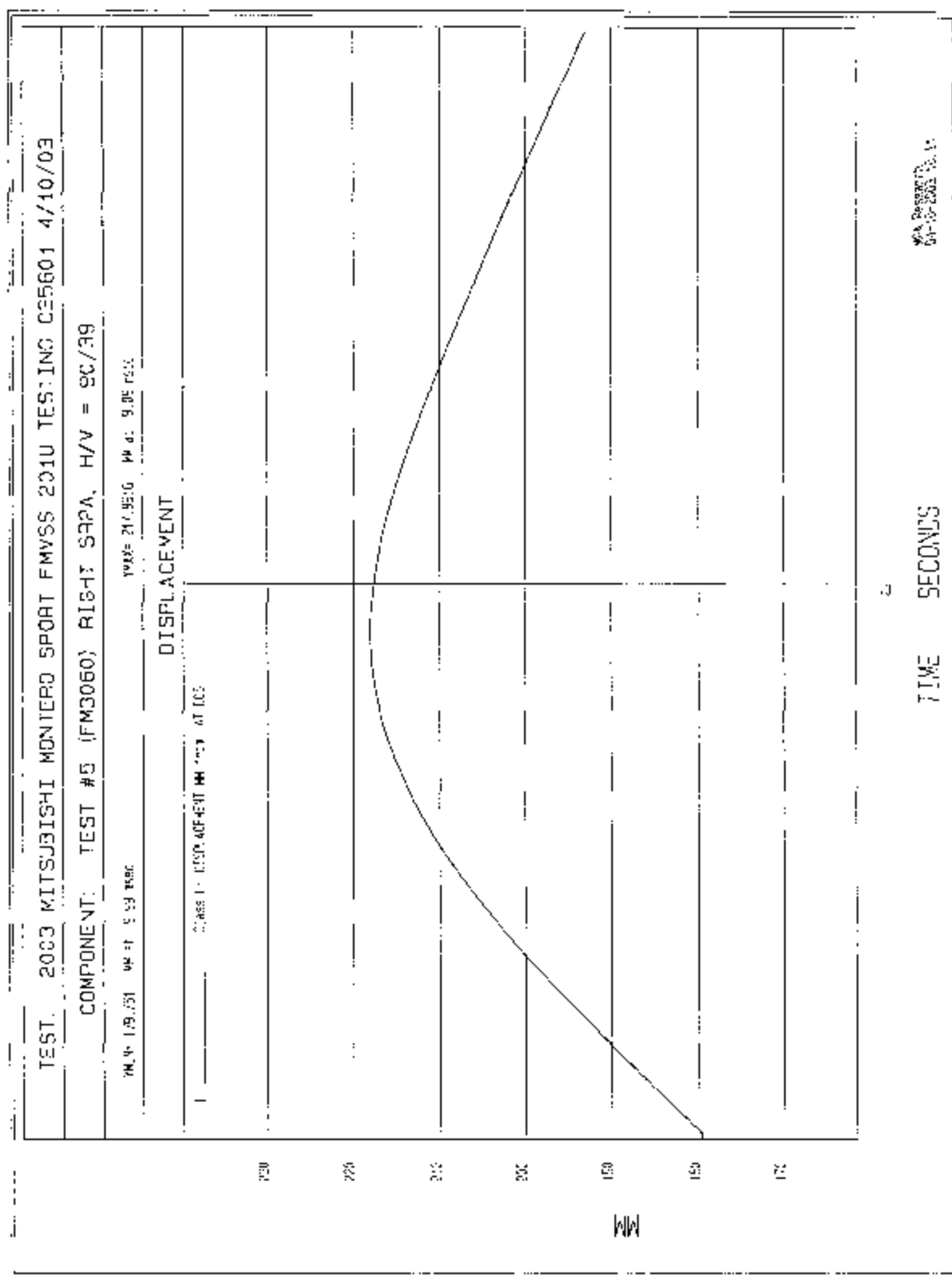
20

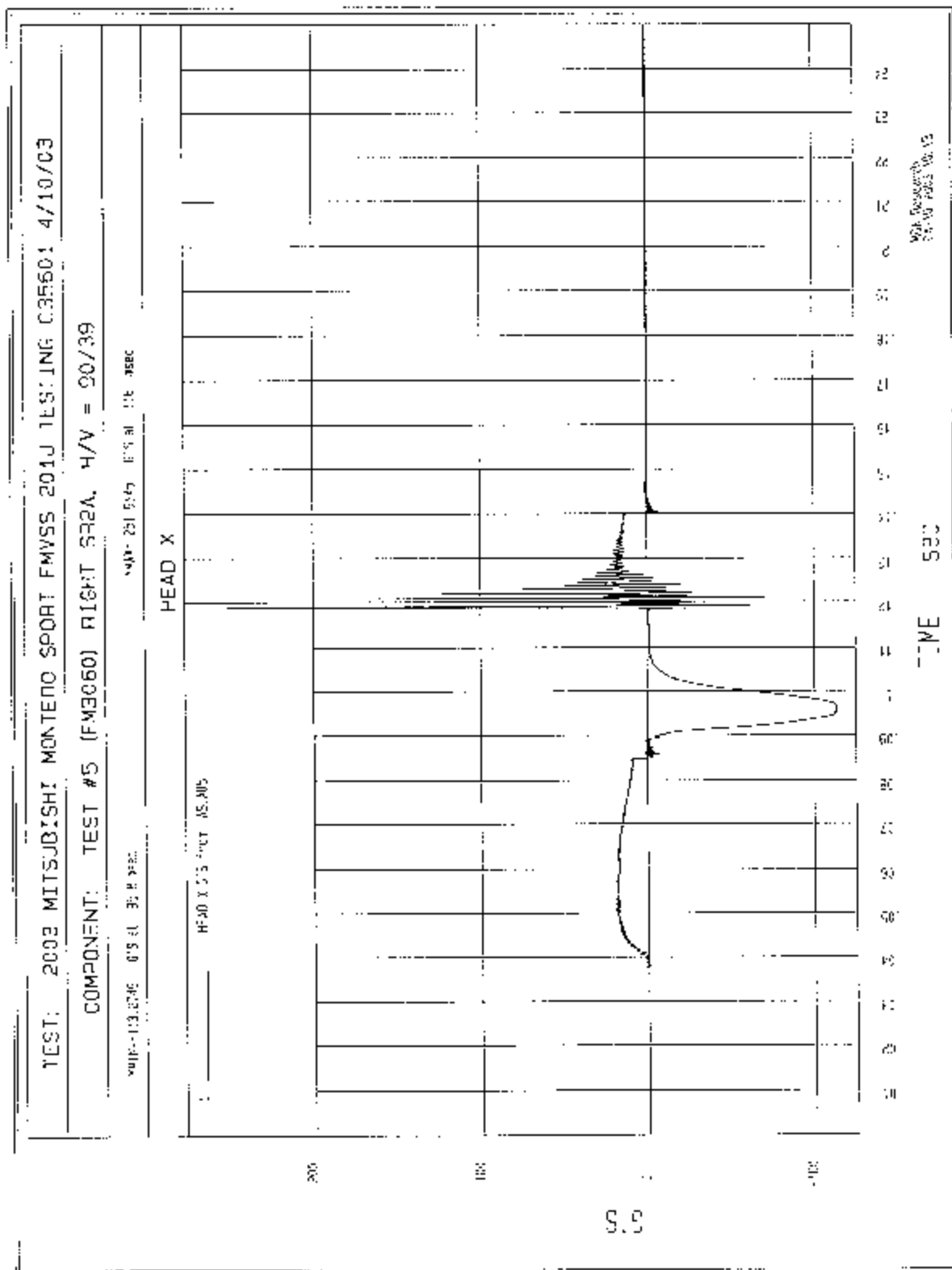
3.9

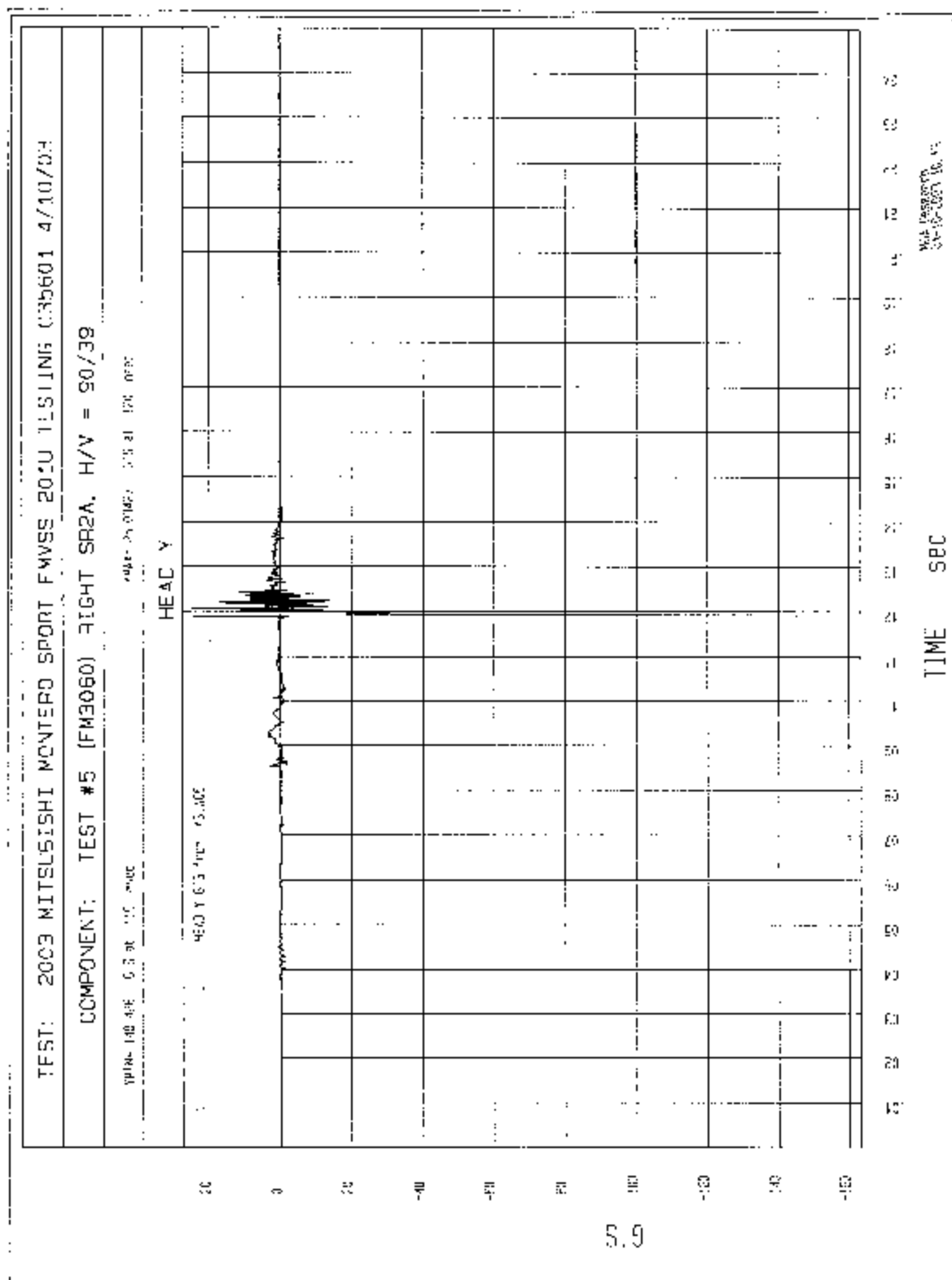
25

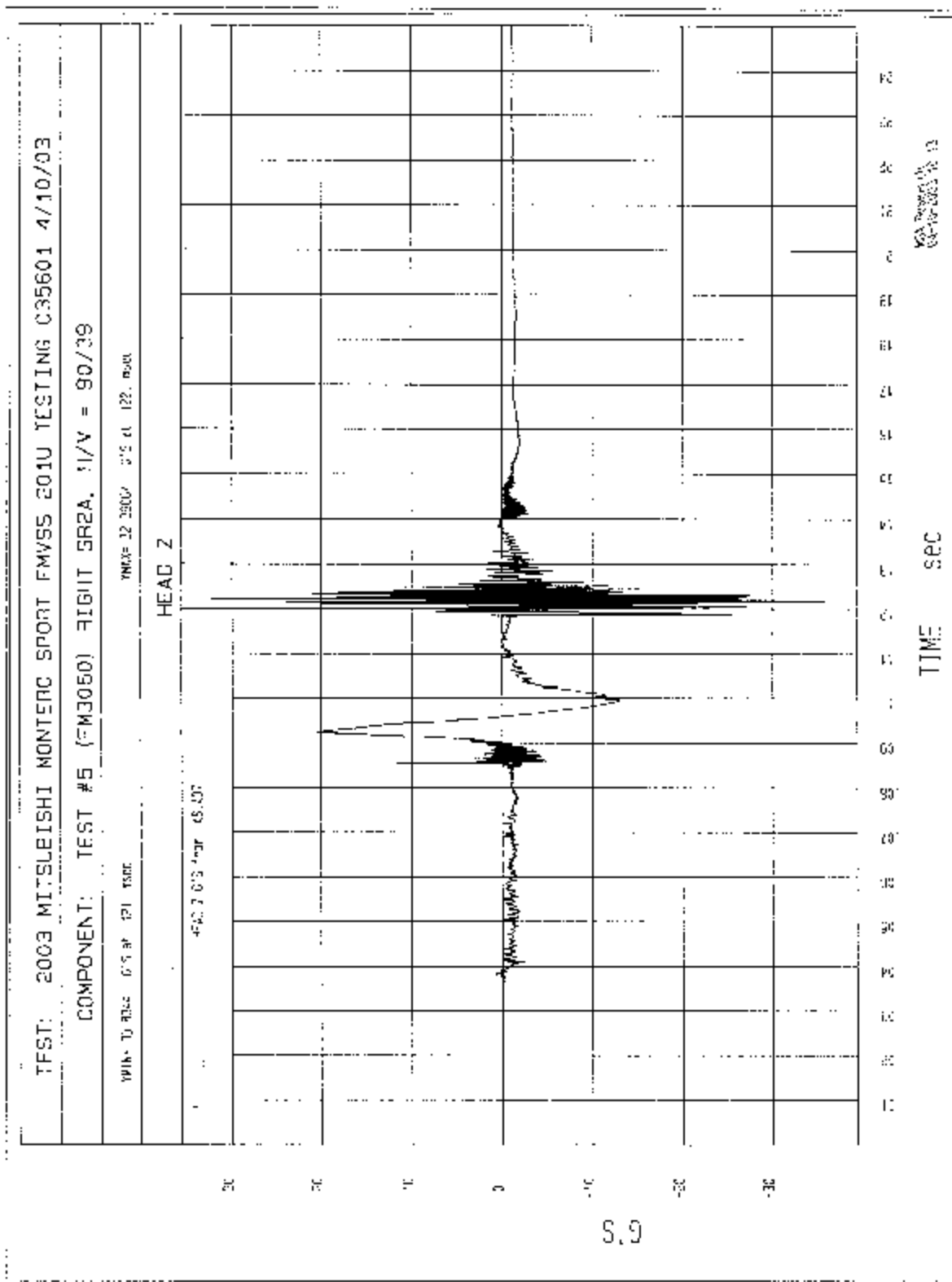
TIME 5.00

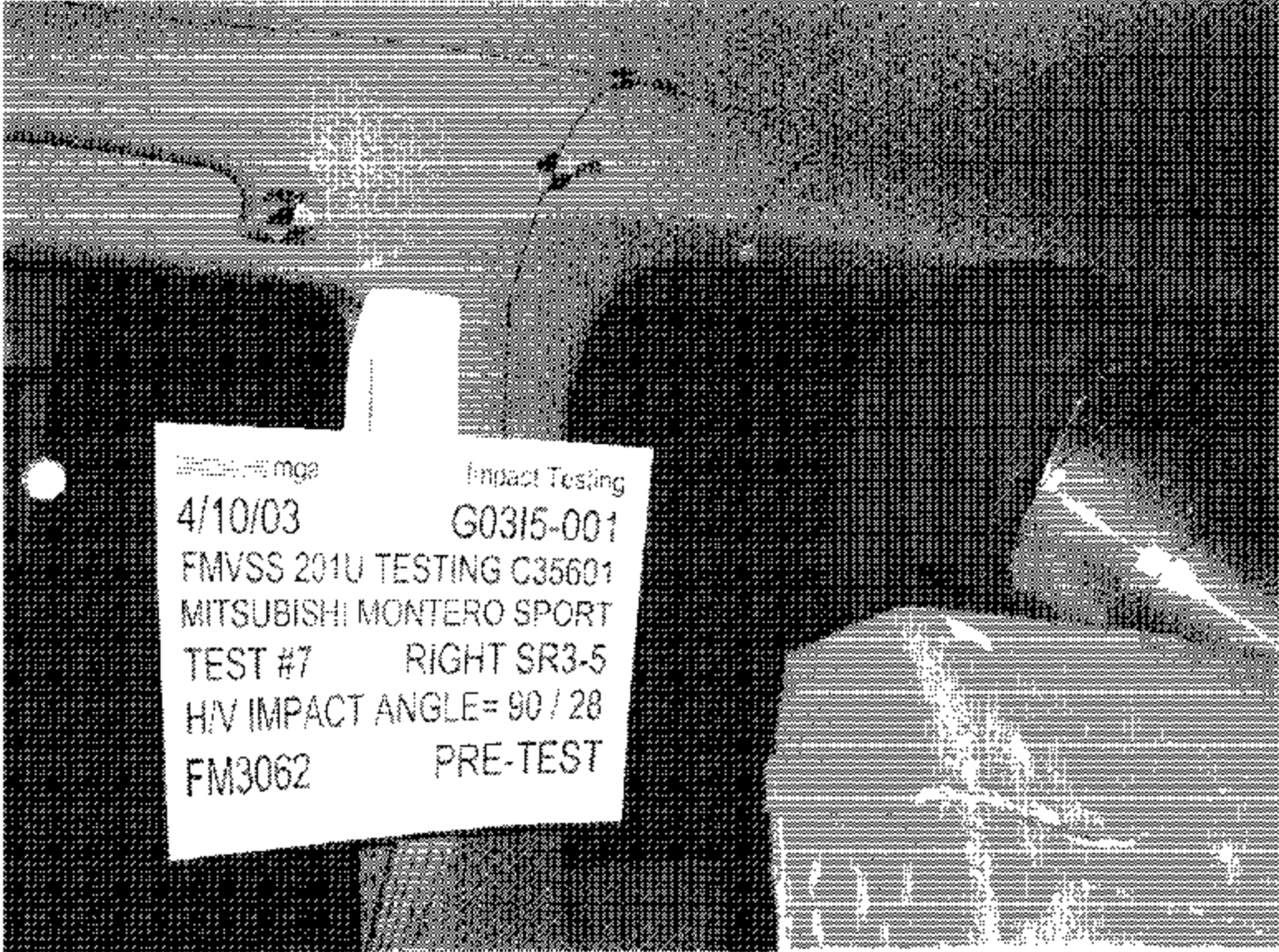
Wt/Wt: 450/430
C35601 4/10/03











Impact Testing

4/10/03

G0315-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #7 RIGHT SR3-5

H/V IMPACT ANGLE= 90 / 28

FM3062 PRE-TEST

4/10/03

Impact Testing

4/10/03

G03I5-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #7 RIGHT SR3-5

HIV IMPACT ANGLE= 90 / 28

FM3062 POST-TEST

===== mga Impact Testing
4/10/03 G0315-001
FMVSS 201U TESTING C35601
MITSUBISHI MONTERO SPORT
TEST #7 RIGHT SR3-5
H/V IMPACT ANGLE= 90 / 28
FM3062 POST-TEST

MICHIGAN OPERATIONS
DATE: 3-20-03
SUPERCEDES: MGATP201U_FRAME: 424

DOC. NO.: MGATP201U_FRAME: 42
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO.: (33601) VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONDICO
SPRINT

GENERAL TEST PARAMETERS:

Test Number: 7

Target (Vehicle Side): Left (right) SL3-S

Temperature: 23 °F (C)

MGA Test Reference No.: FM3062

Humidity: 17 %

Approach Angles: Horizontal 90 °

Time of Test: 10:56 am/pm

Vertical 20 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>442</u>	<u>365</u>	<u>9.5</u>	<u>23.7</u>	<u>1</u>	<u>2</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>FM 1735-353400</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35914</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J358051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.) _____

Slight Headline Deformation

Recorded By: [Signature] Approved By: [Signature] Date: 4/10/03

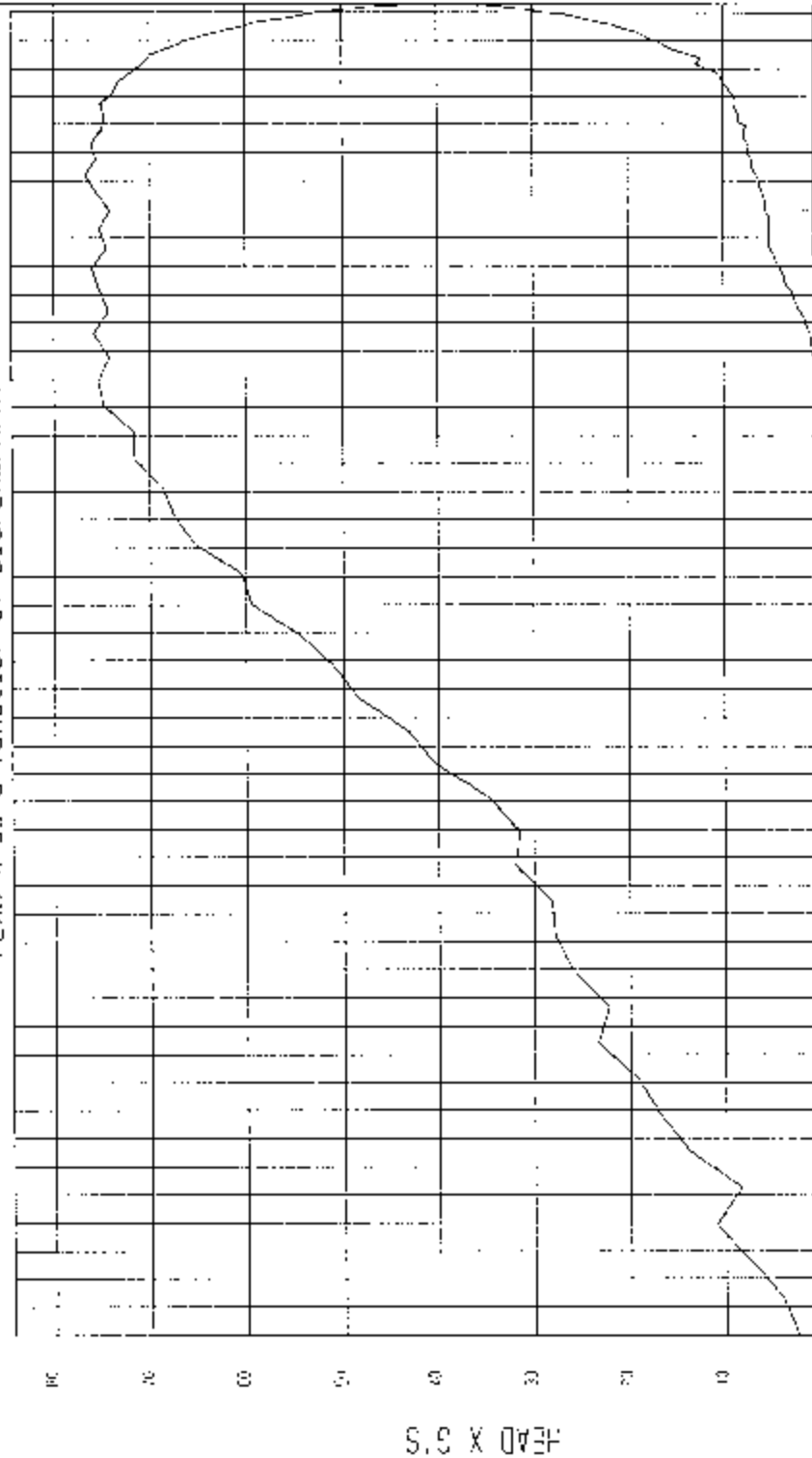
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3062AV.A05
HIC = 364.67 calculated over 9.5 msec
T1 = 3.20 msec T2 = 12.70 msec
*****
HIC(d) = 442
Impact Velocity = 23.7 (km/h)
```

TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 2010 TESTING C25501 4/10/03

COMPONENT: TEST #7 (FM3062) RIGHT SR3-5, H/V = 50/28

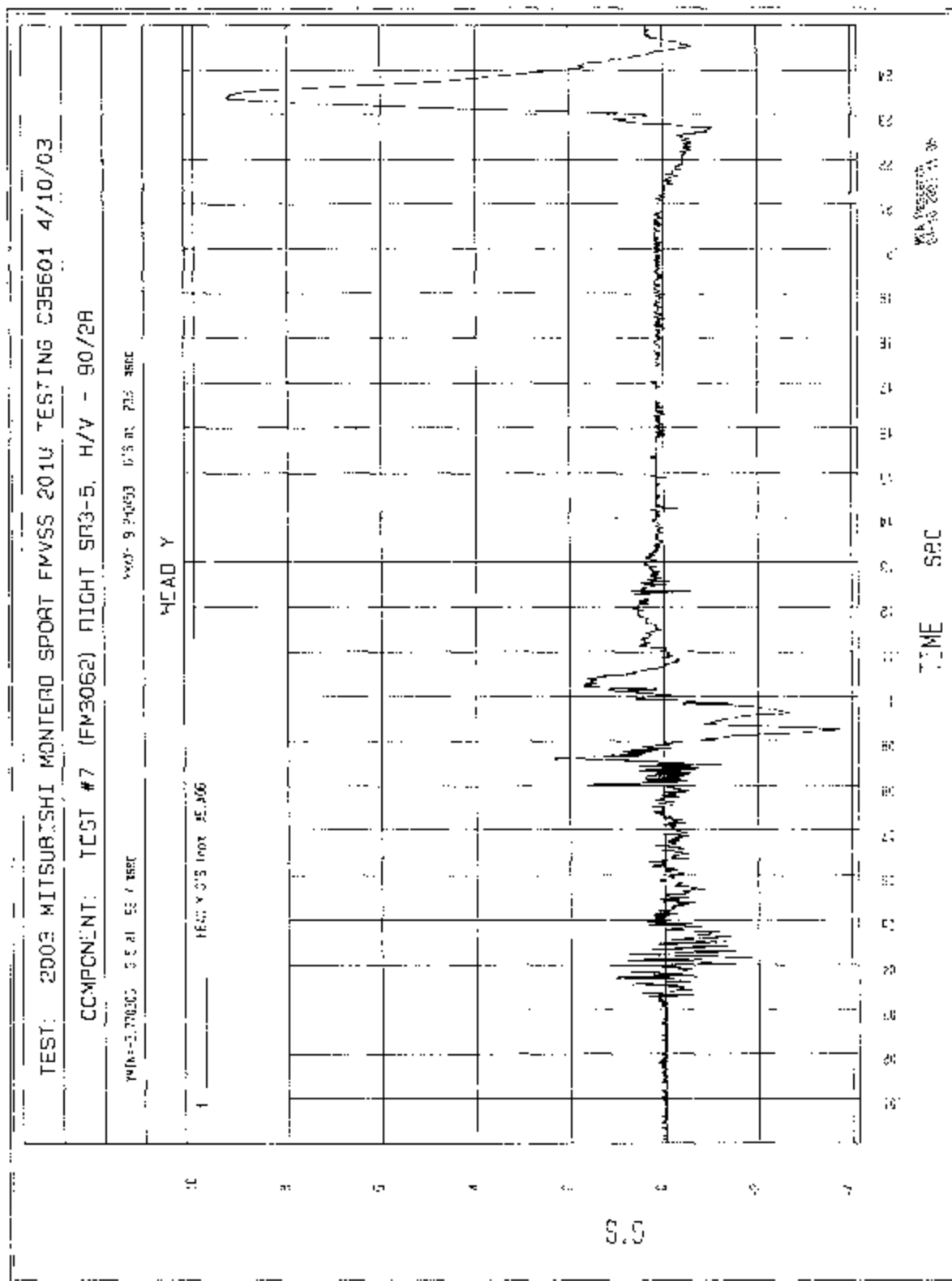
HEAD X as a function of DISPLACEMENT

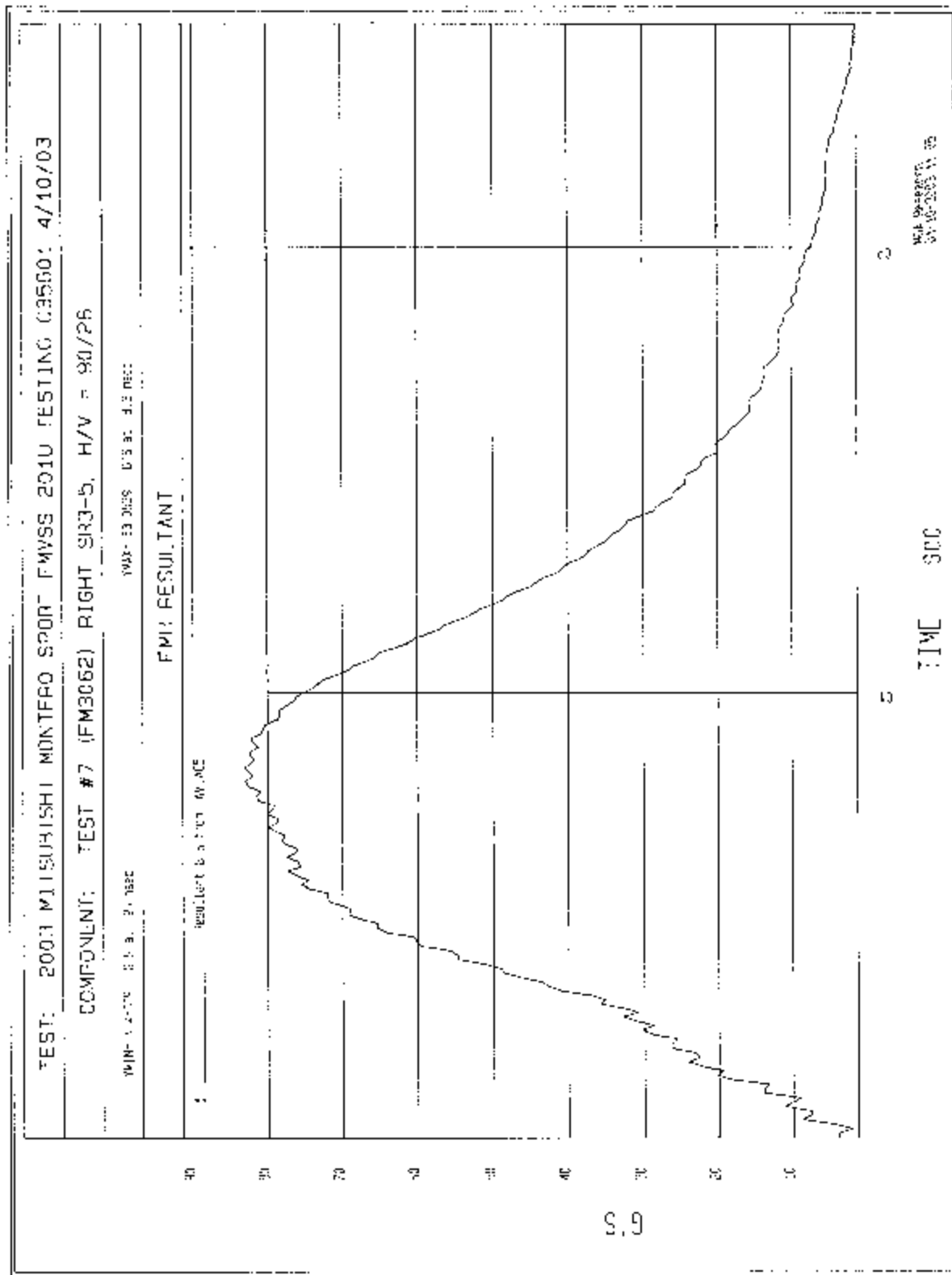


WCA WORKSHEET
ON 03-0003 11.05

DISPLACEMENT MM

HEAD X (G'S)





TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 201J TESTING C35501 4/10/03

COMPONENT: TEST #7 (FM3062) RIGHT SR3-5, F/V - 90/28

MCM-IPC 5002 MW 30 0.00 0.000

7933-227 541 MW 21 12 E REAC

DISPLACEMENT

1 _____ CUMULATIVE DISPLACEMENT MM INCH AT 1574

250

240

230

220

210

200

190

180

170

MM

5

TIME SECONDS

5

03-0-00000 15 00

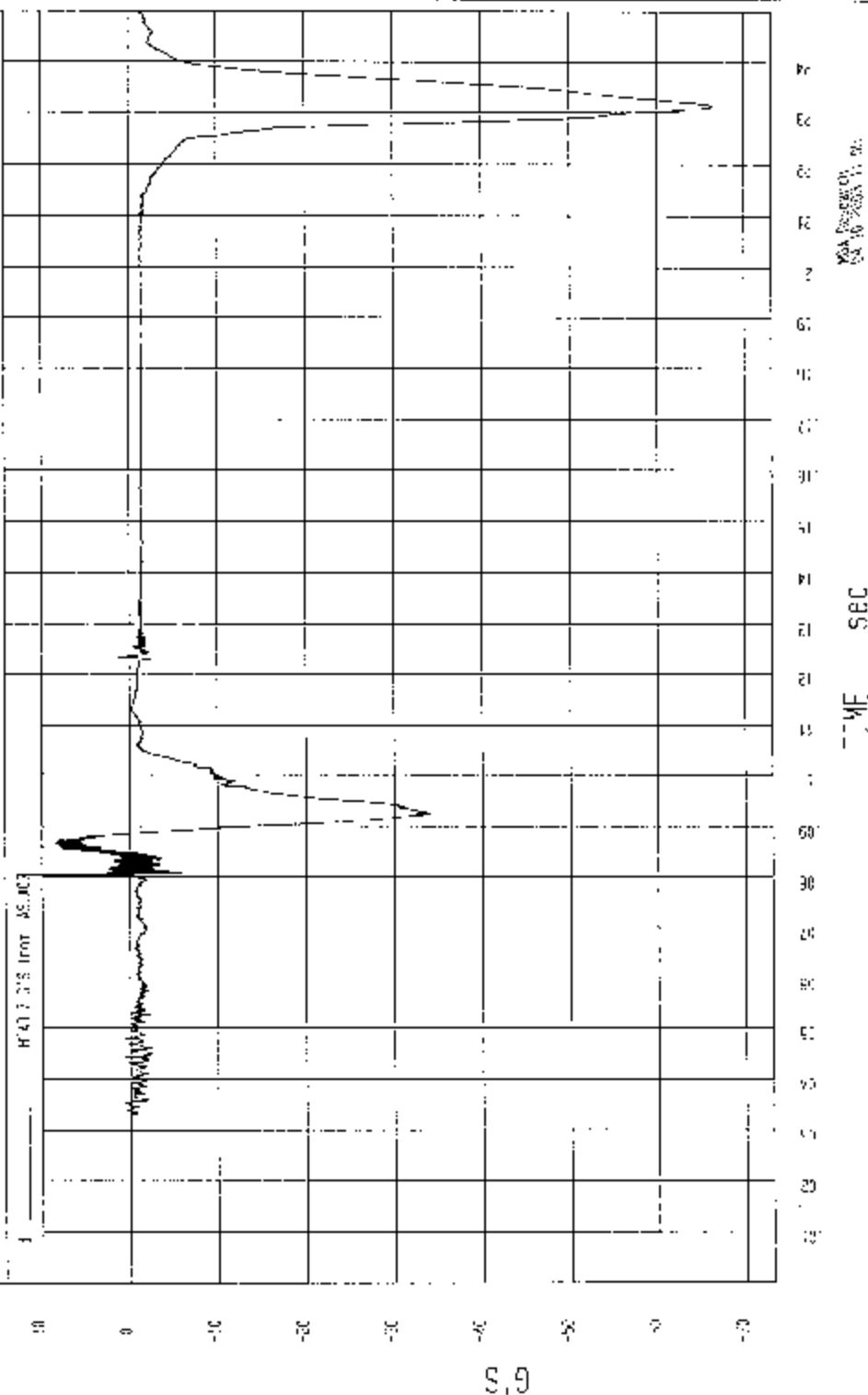
TEST: 2003 MITSUBISHI MONTERO SPORT 5MVSS 201U TESTING C35601 4/10/03

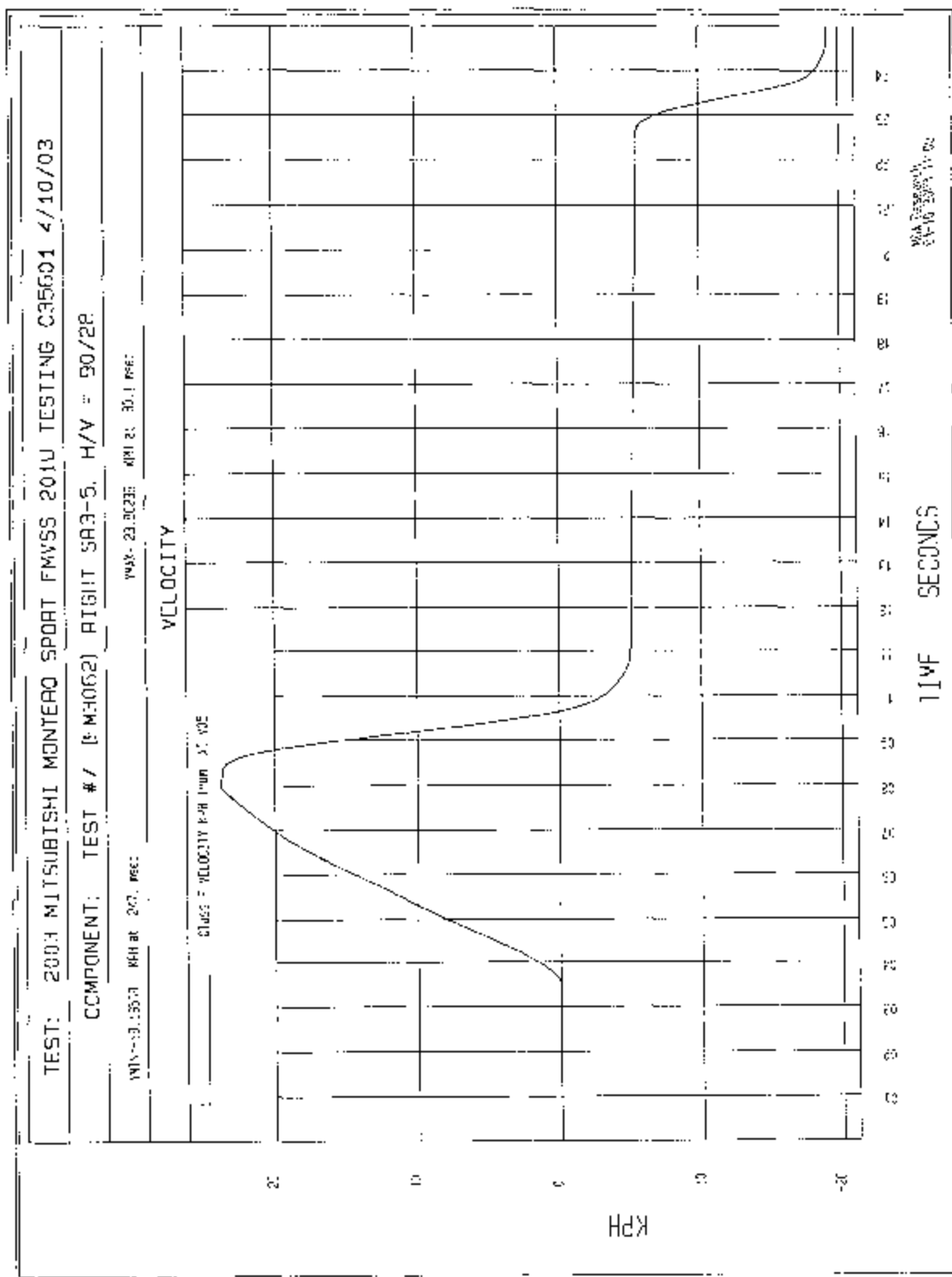
COMPONENT: TEST #7 (FM3062) RIGHT SR3-5, H/V = 90/20

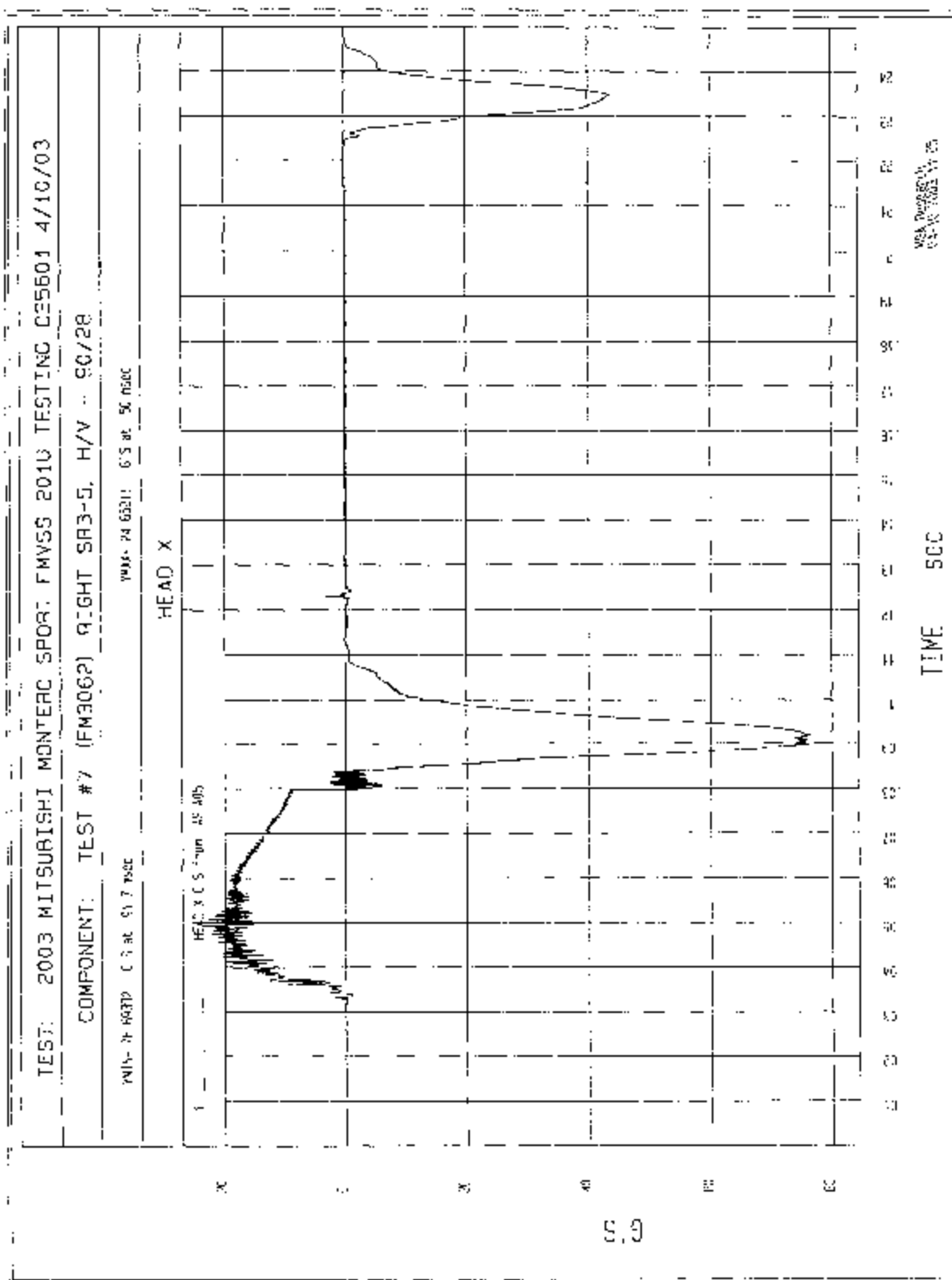
10 V-HZ 4512 2'S at 231. m/s

1000 12 3505 1'S at 30.4 m/s

HEAD 2









IMPACT TESTING
G0315-001
4/10/03
FMVSS 2010 TESTING C3S001
MITSUBISHI MONTERO SPORT
TEST #8
LEFT UR1
H/V IMPACT ANGLE = 270 ± 3°
FM3063
PRE-TEST

K04044-mga

Impact Testing

4/10/03

G03I5-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #8

LEFT UR1

H/V IMPACT ANGLE= 270 / 37

FM3063

POST-TEST

===== mga Impact Testing
4/10/03 G0315-001
FMVSS 201U TESTING C35601
MITSUBISHI MONTERO SPORT
TEST #8 LEFT UR1
H/V IMPACT ANGLE= 270 / 37
FM3063 POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: 6035-001 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTERO

GENERAL TEST PARAMETERS:

Test Number: 8

Target (Vehicle Side) Left/Right UR

Temperature: 23 °F(°C)

MGA Test Reference No.: FM3063

Humidity: 16 %

Approach Angles: Horizontal 270 °

Time of Test: 4:00 a.m./p.m.

Vertical: 37 °

FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>556</u>	<u>516</u>	<u>9.4</u>	<u>238</u>	<u>44</u>	<u>8</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35923</u>	<u>100.9</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35916</u>	<u>100.7</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35910</u>	<u>100.8</u>	<u>1.51</u>	<u>1.51</u>

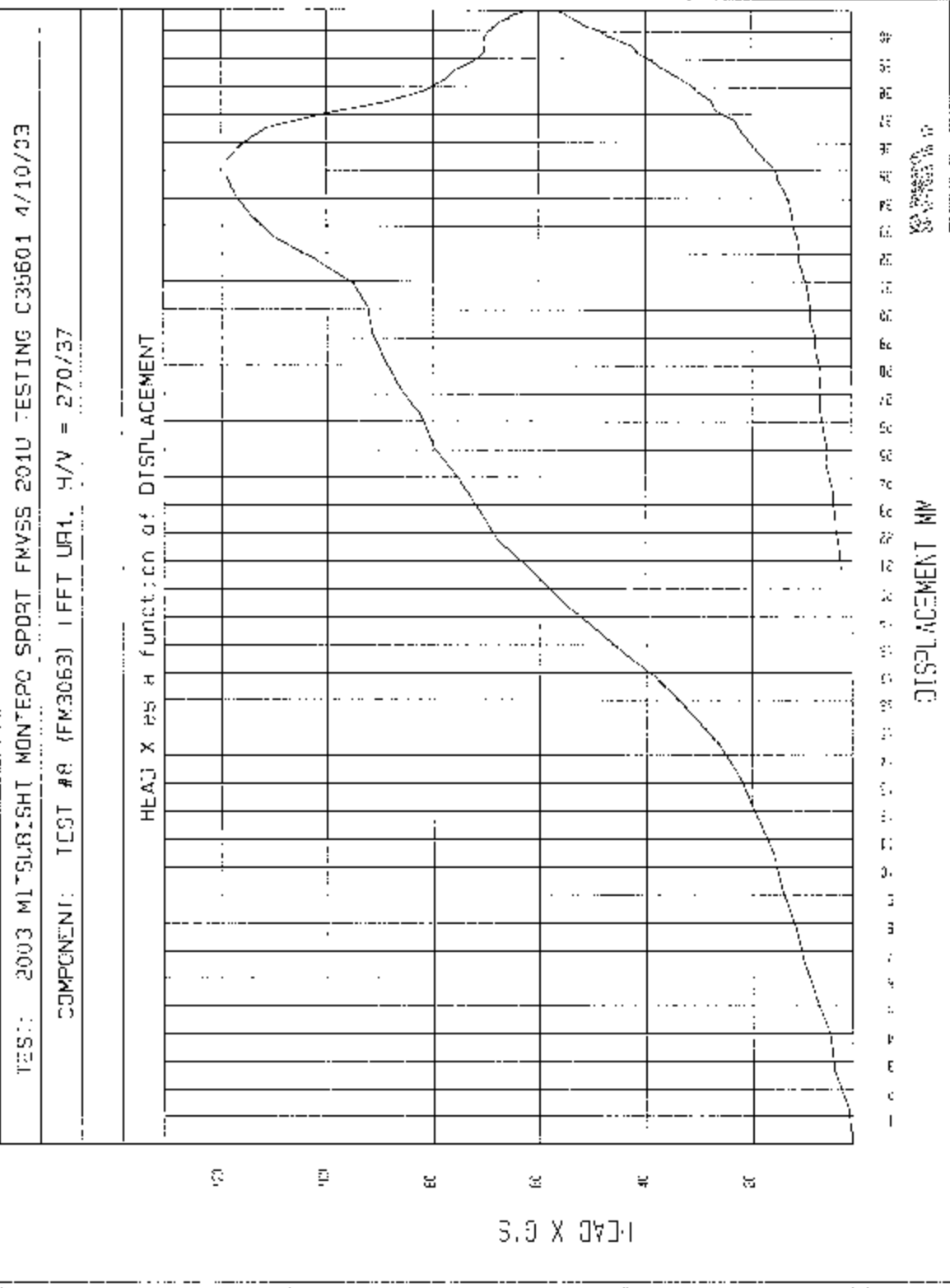
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO USABLE DAMAGE

Recorded By: [Signature] Approved By: [Signature] Date: 4/10/03

*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM3063AV.A05
HIC = 516.11 calculated over 9.4 msec
T1 = 2.80 msec T2 = 12.20 msec
*****
HIC(d) = 556
Impact velocity = 23.8 (km/h)
```



TFST: 2003 MLT3URISHI MONTERO SPORT SMVSS 201J TESTING C25601 4/10/03

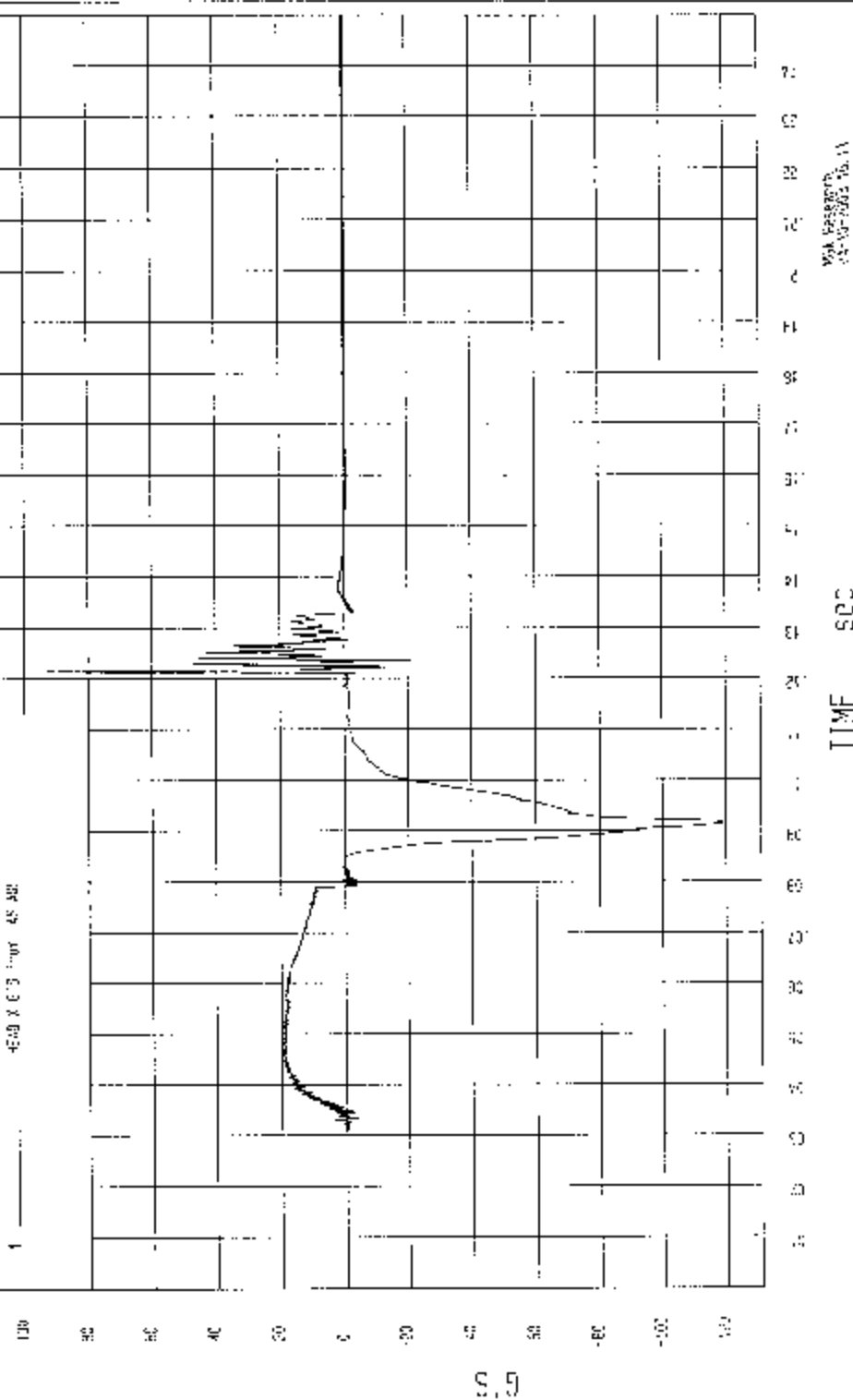
COMPONENT: TFST #8 (FM3053) LEFT UR1, I/V = 27C/37

WAVE-115 0015 C 100 91.3 1000

WAVE 99 04709 100 at 101 1000

-LEAD X

4500 X 0.9 1000 45 400



WAVE-115 0015
C 100 91.3 1000

TEST 1 2003 MITSUBISHI MONTERO SPORT FMVSS 201J TESTING C35501 4/10/03

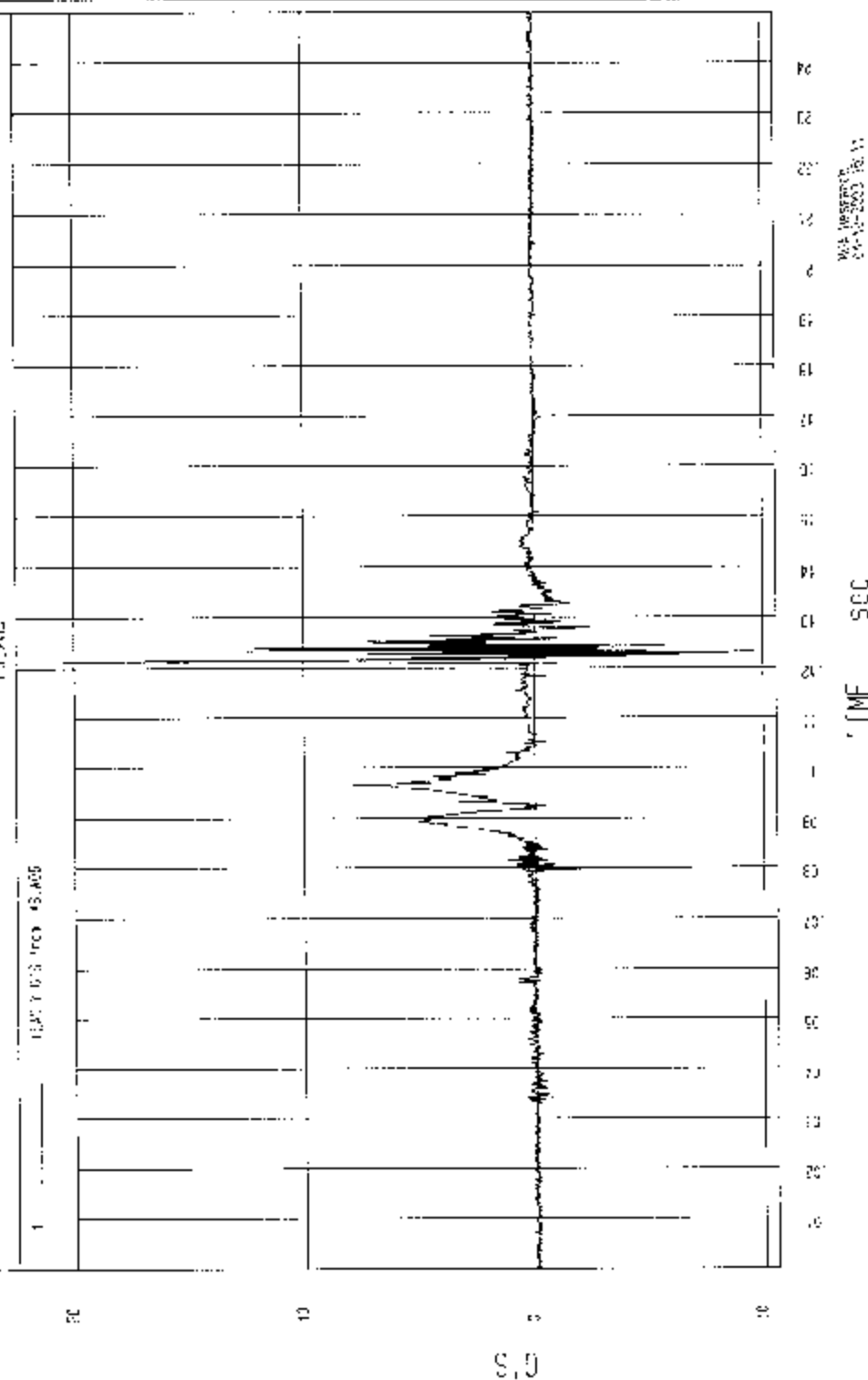
COMPONENT: TEST #8 (FM3053) LEFT UR1. H/V = 270/37

WV-9 510447 11:30:00 000

WV-9 510447 11:30:00 000

HEAD V

1 0.000000 0.000000 0.000000



WV-9 510447 11:30:00 000

TEST: 2003 MITSUBISHI MONTEPC SPORT FVWSS 201U TESTING C35501 4/10/03

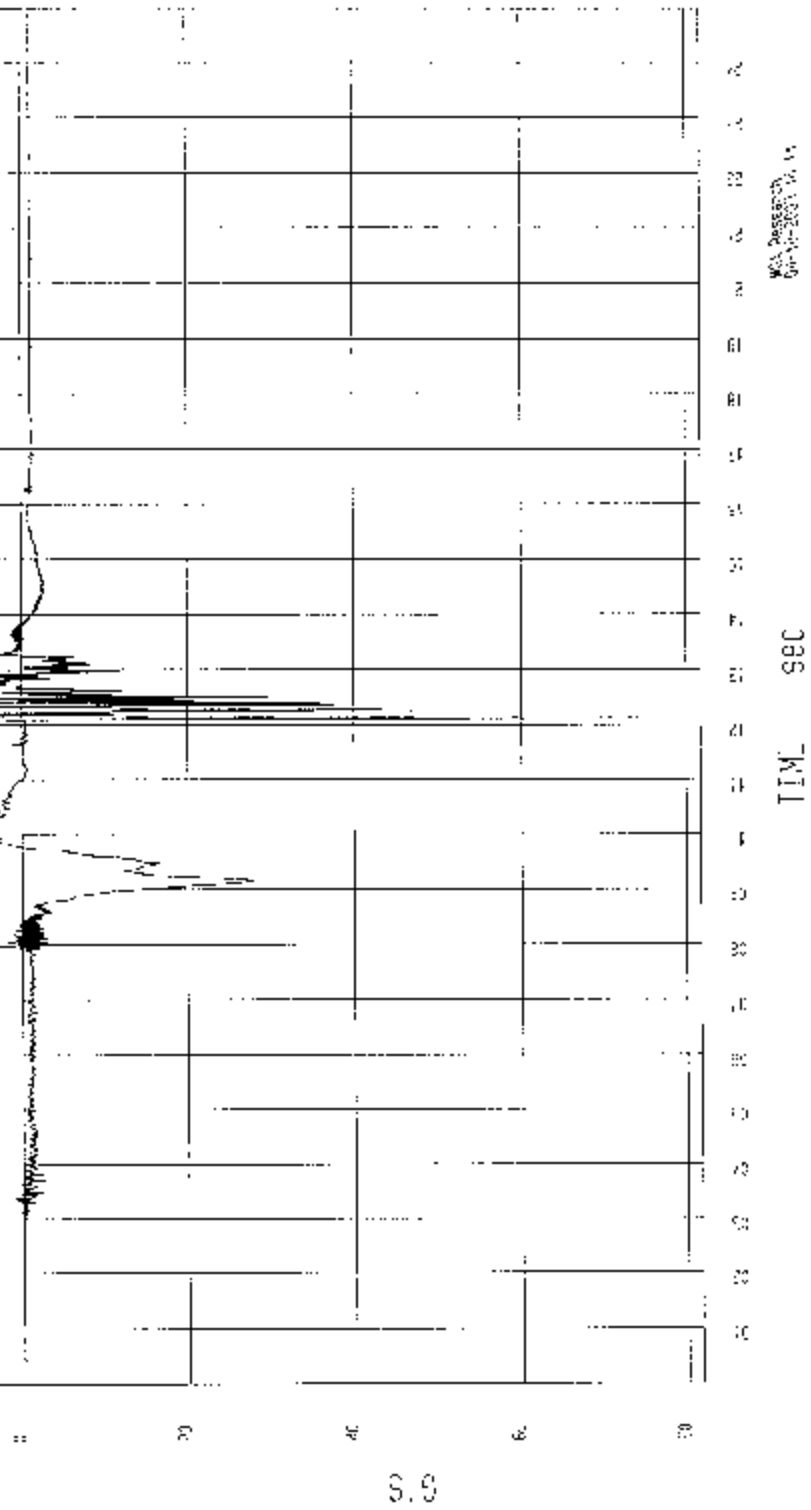
COMPONENT: TEST #8 [FM3063] LEFT UR1, H/V = 270/37

WAVEFORM: 0.5 sec 101 kHz

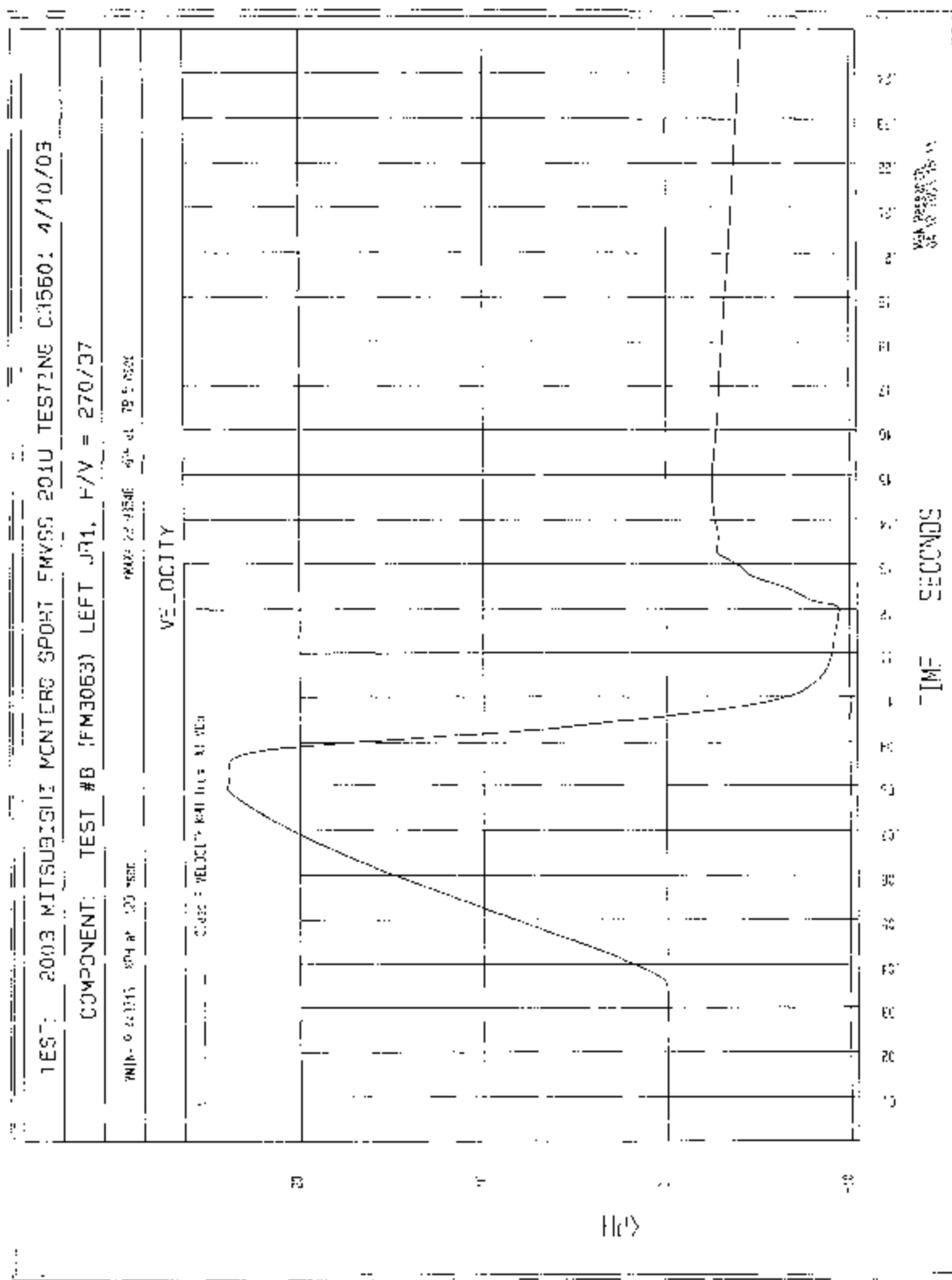
WAVEFORM: 0.5 sec 101 kHz

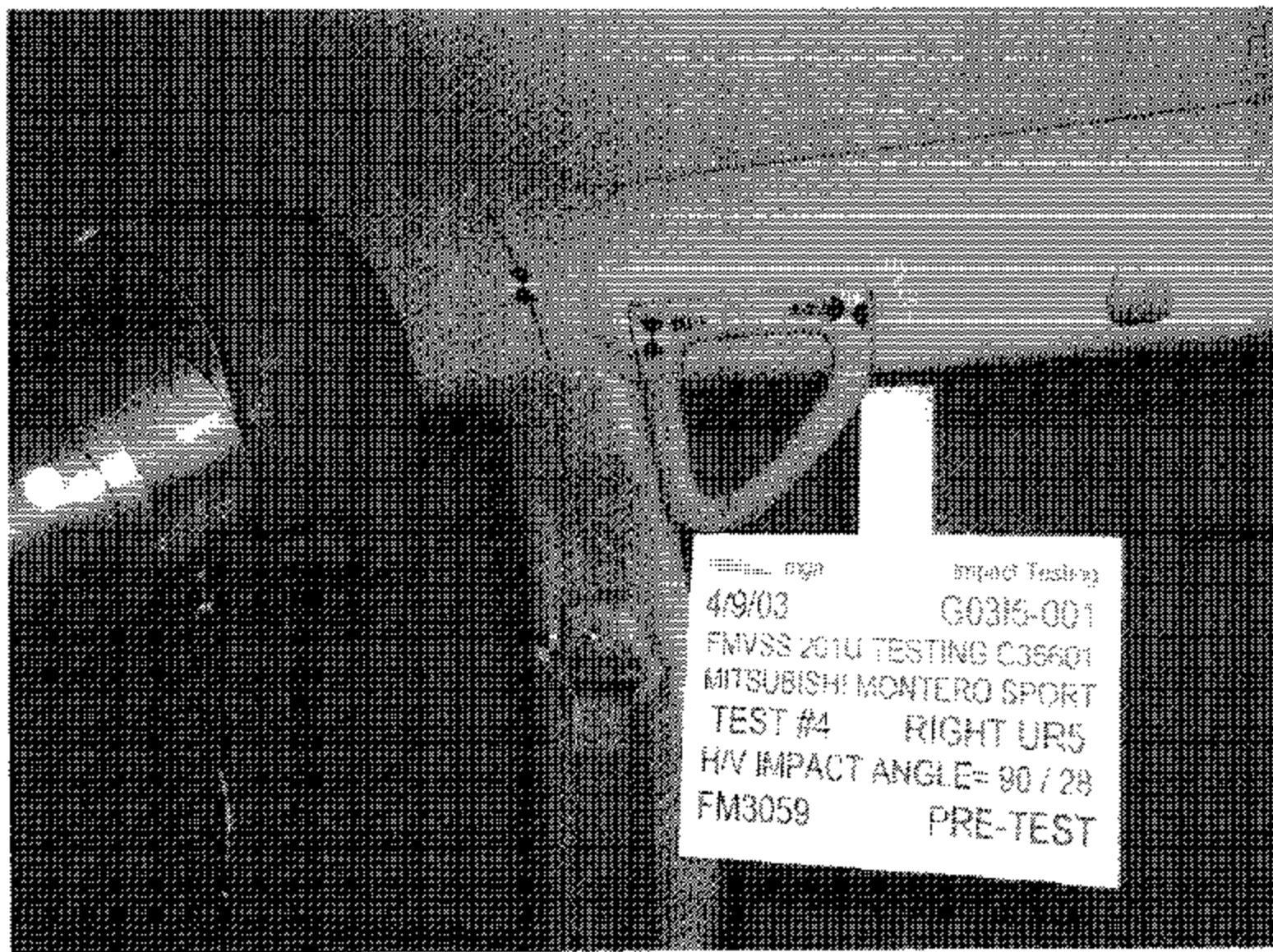
HFAD 7

--20.2 6/3 101-- 101 kHz



WAVEFORM: 0.5 sec 101 kHz





4/9/03

Impact Testing

4/9/03

G0315-001

FMVSS 201U TESTING C35601

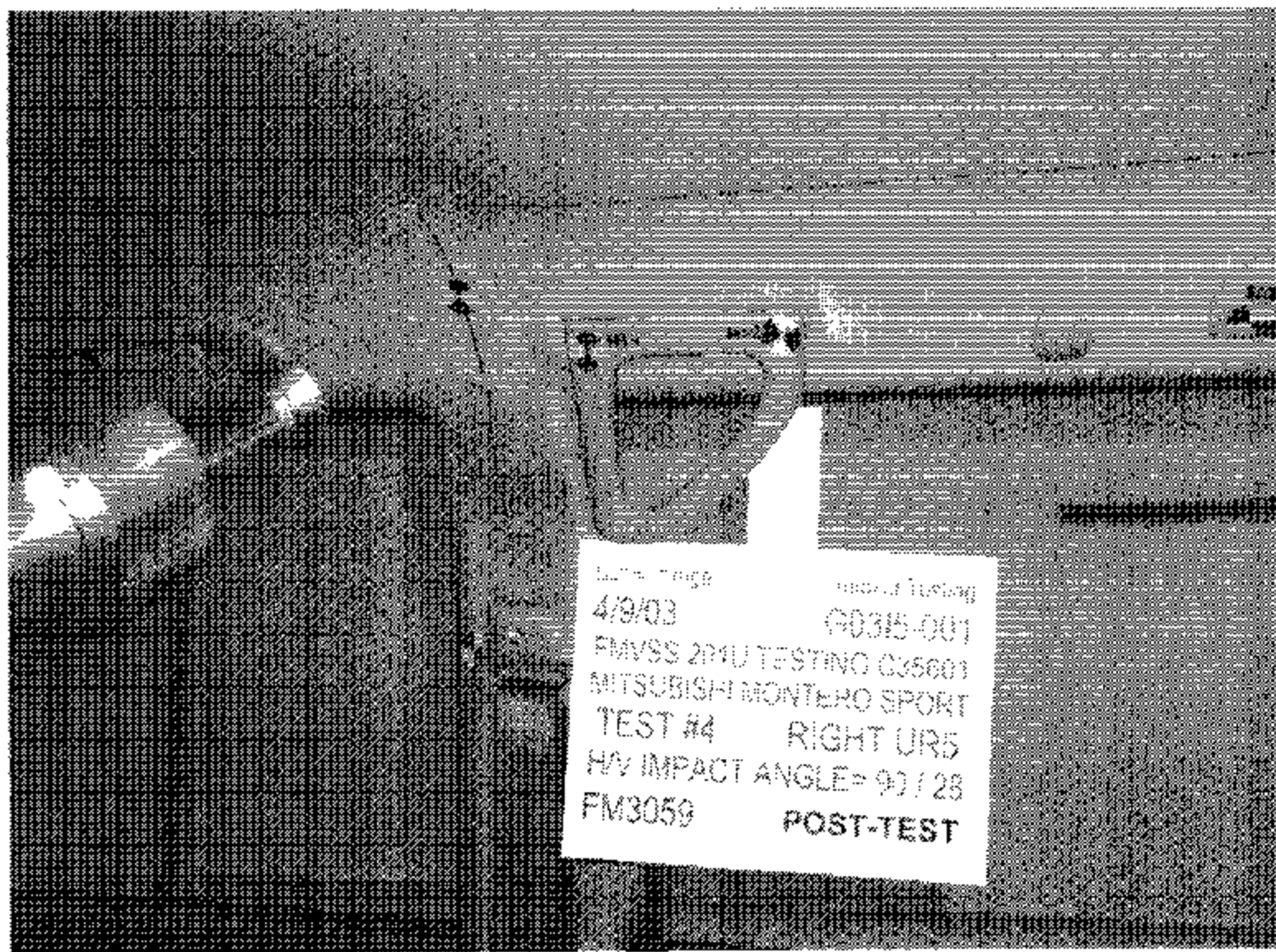
MITSUBISHI MONTERO SPORT

TEST #4 RIGHT UR5

H/V IMPACT ANGLE= 90 / 28

FM3059

PRE-TEST



mga

Impact Testing

4/9/03

G0315-001

FMVSS 201U TESTING C35601

MITSUBISHI MONTERO SPORT

TEST #4 RIGHT UR5

H/V IMPACT ANGLE= 90 / 28

FM3059

POST-TEST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES MGATP201U_FRAME #2 4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO. 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C35601 VEHICLE YR/MAKE/MODEL: 2003 MITSUBISHI MONTRO SPORT

GENERAL TEST PARAMETERS:

Test Number: 4

Target (Vehicle Side): left (right) URS

Temperature: 24 °F (C)

MGA Test Reference No.: F13055

Humidity: 19 %

Approach Angles: Horizontal 90 °

Time of Test: 5:01 am/pm (pm)

Vertical 28 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	<u>Left</u> / Right Pt. O
<u>52.5</u>	<u>475</u>	<u>11.2</u>	<u>22.8</u>	<u>43</u>	<u>12</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35424</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35419</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): _____

SLIGHT HENDERSON DEFORMATION

Recorded By: [Signature] Approved By: Heleen D. Kalata Date: 4/5/03

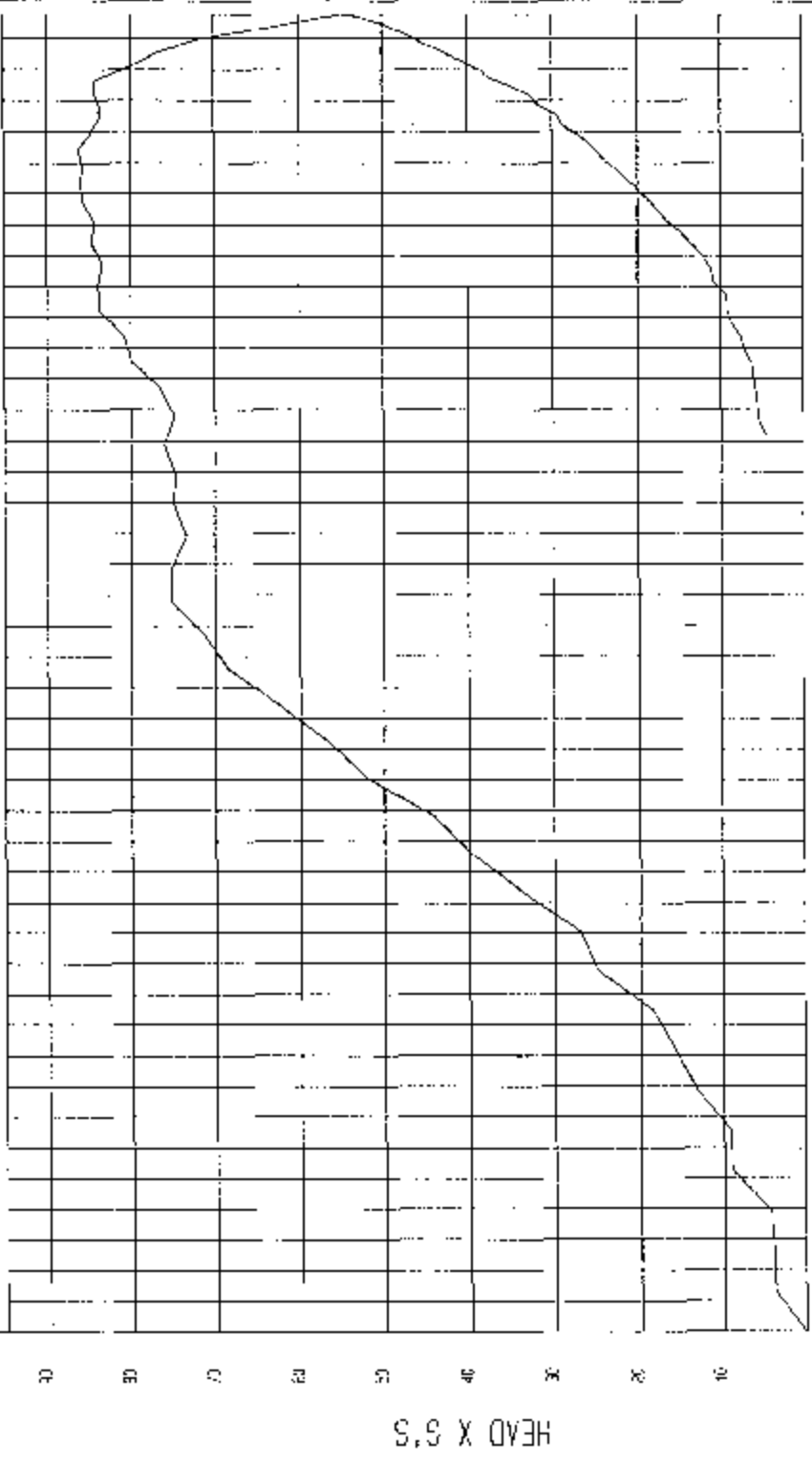
*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM3059AV.A05
: HIC = 474.68 calculated over 11.2 msec
T1 = 2.70 msec T2 = 13.90 msec
*****
HIC(d) = 525
Impact Velocity = 23.8 (km/h)
```

TEST: 2003 MITSUBISHI MONTERO SPORT FMVSS 2010 TESTING C35601 4/9/03

COMPONENT: TEST #4 (FM3059) RIGHT UP5, H/V = 90/28

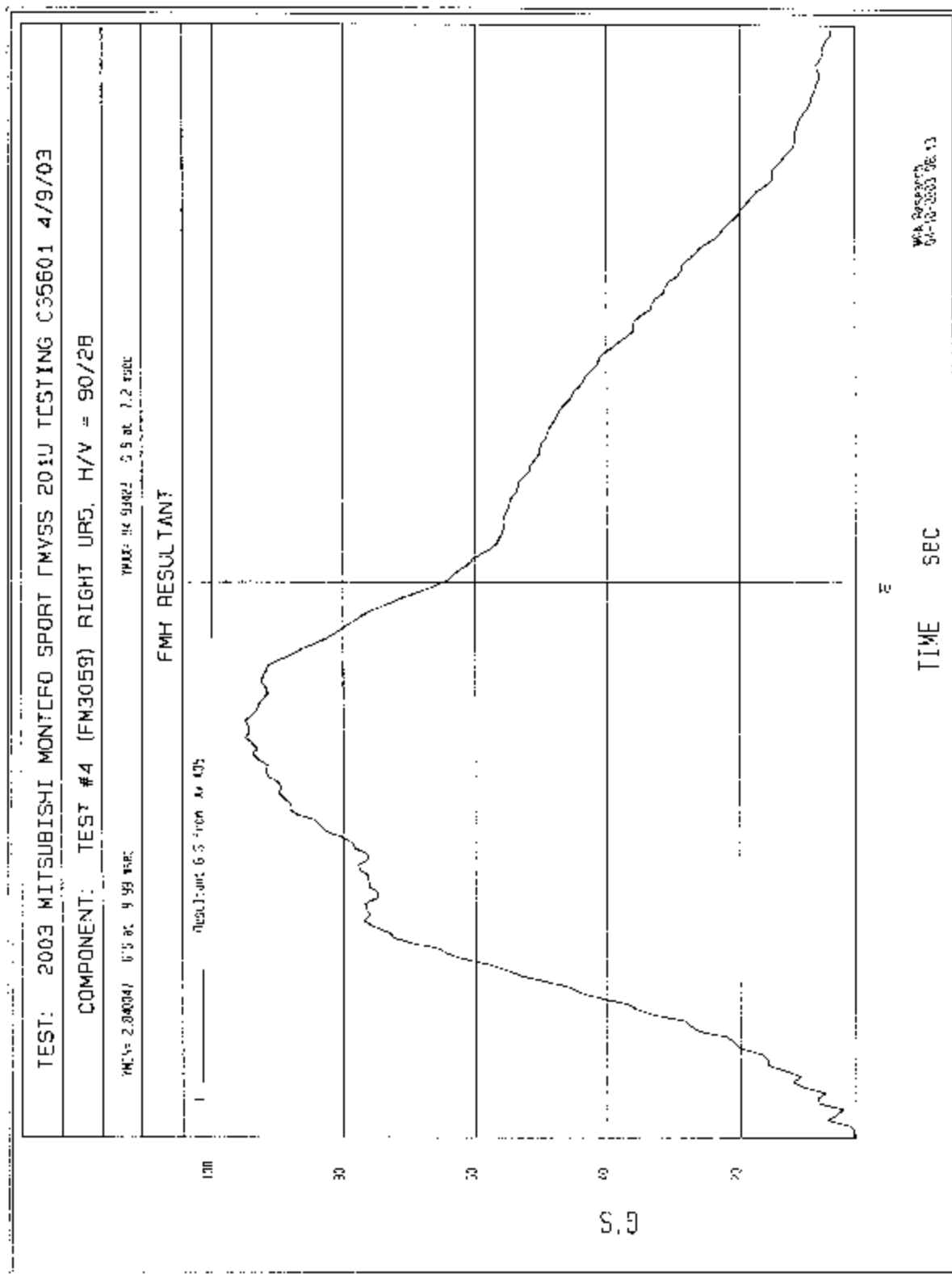
HEAD X as a function of DISPLACEMENT

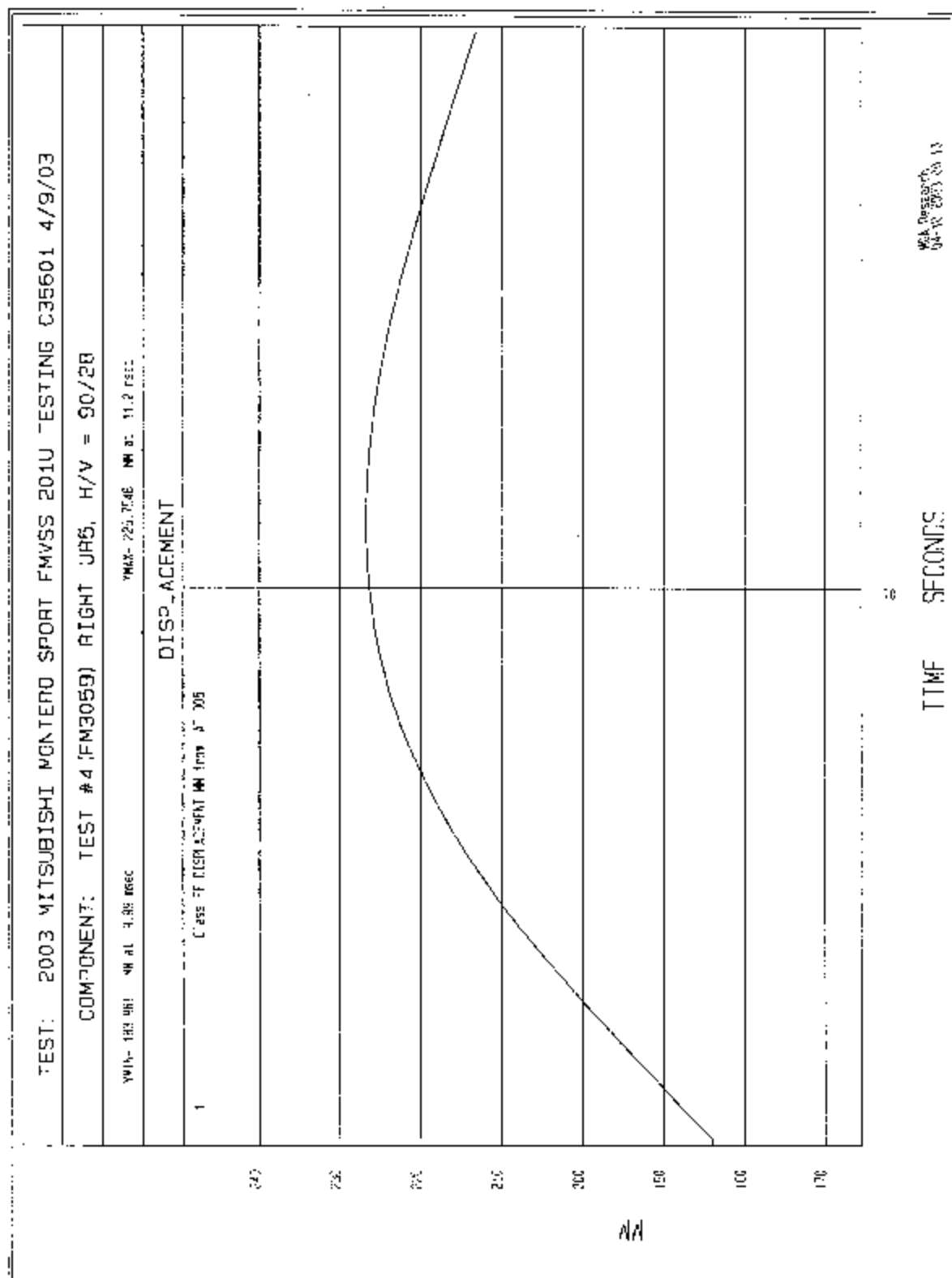


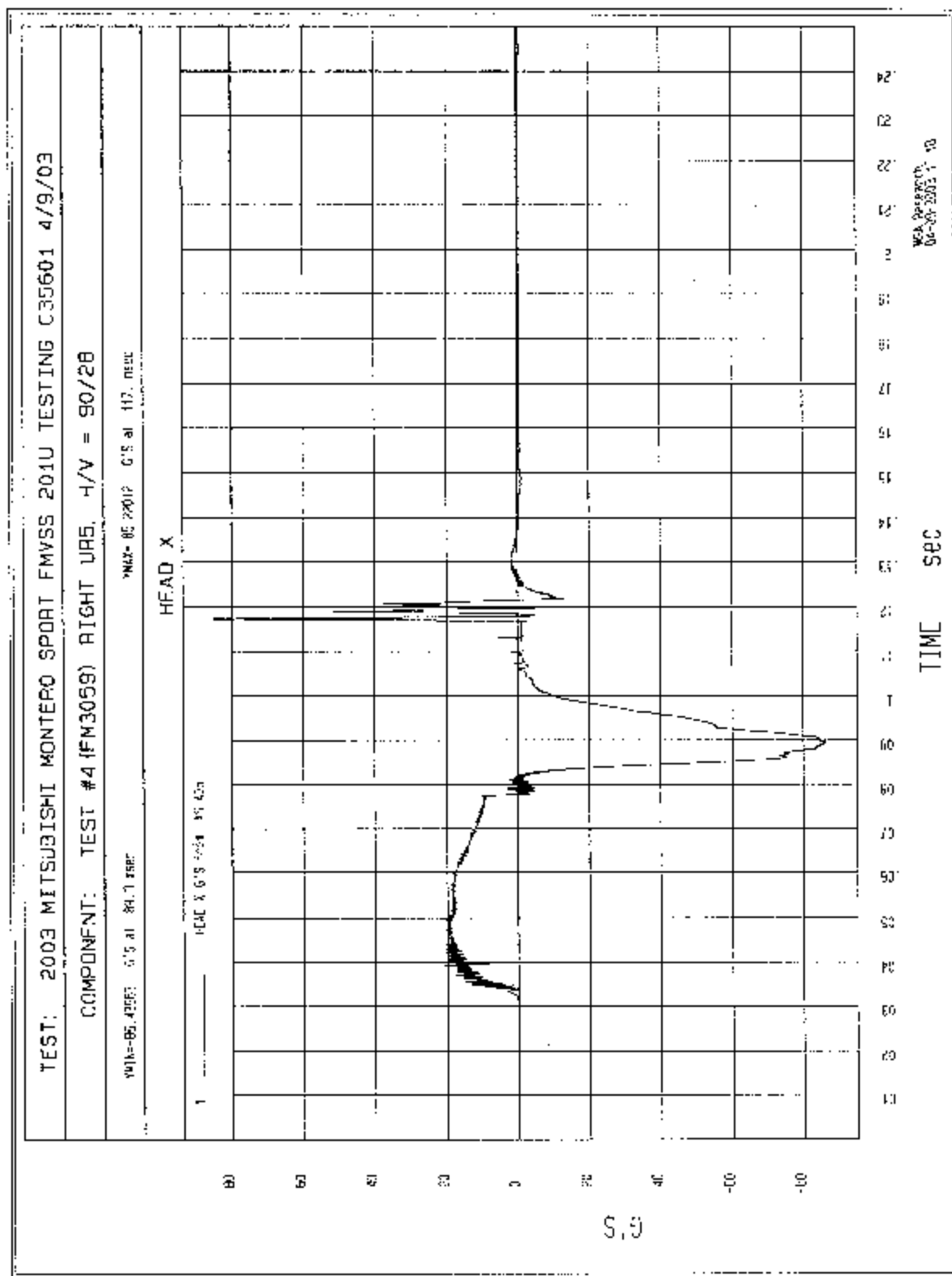
Weld Inspection
03-04-2003 10:15

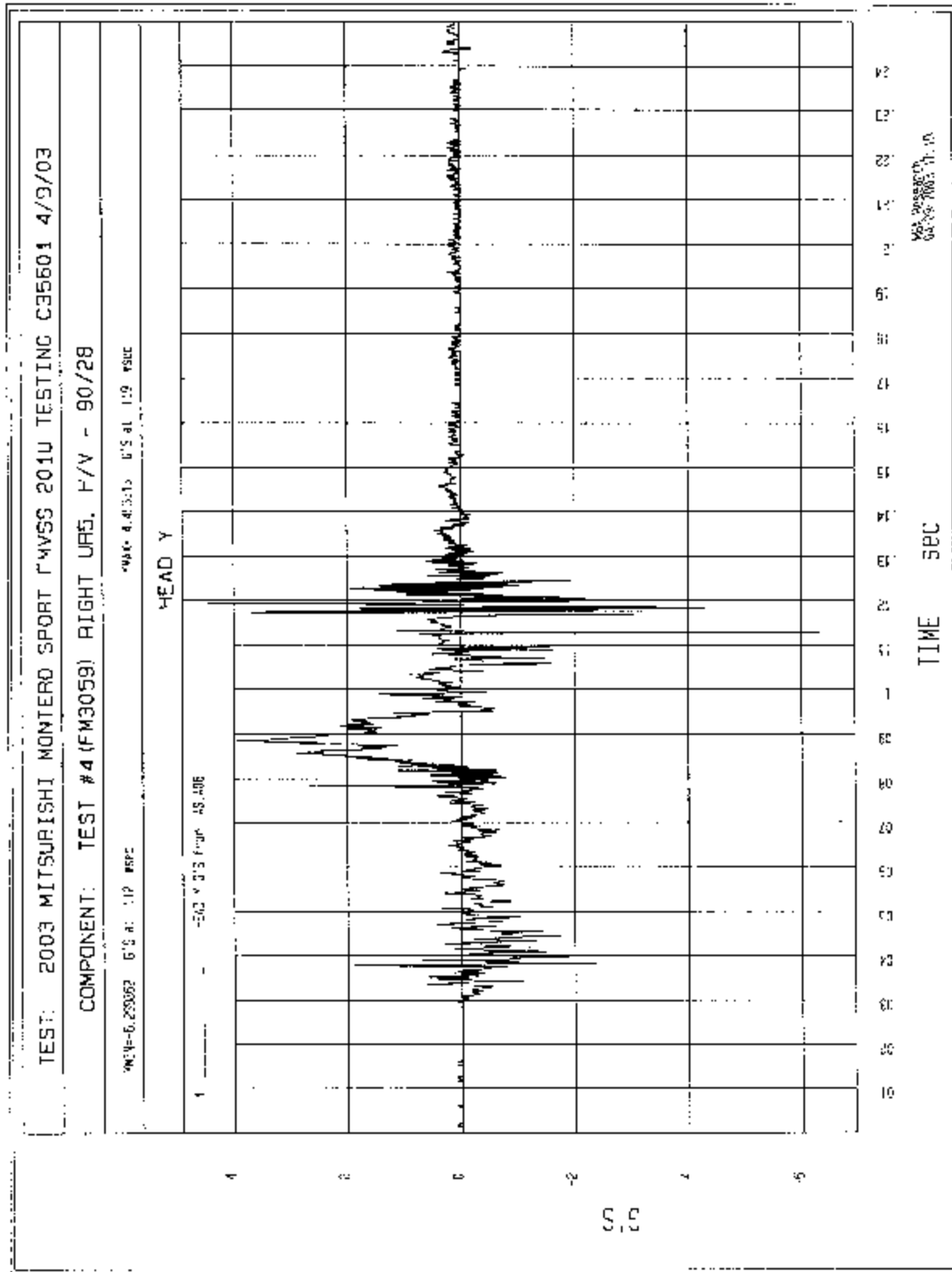
DISPLACEMENT MM

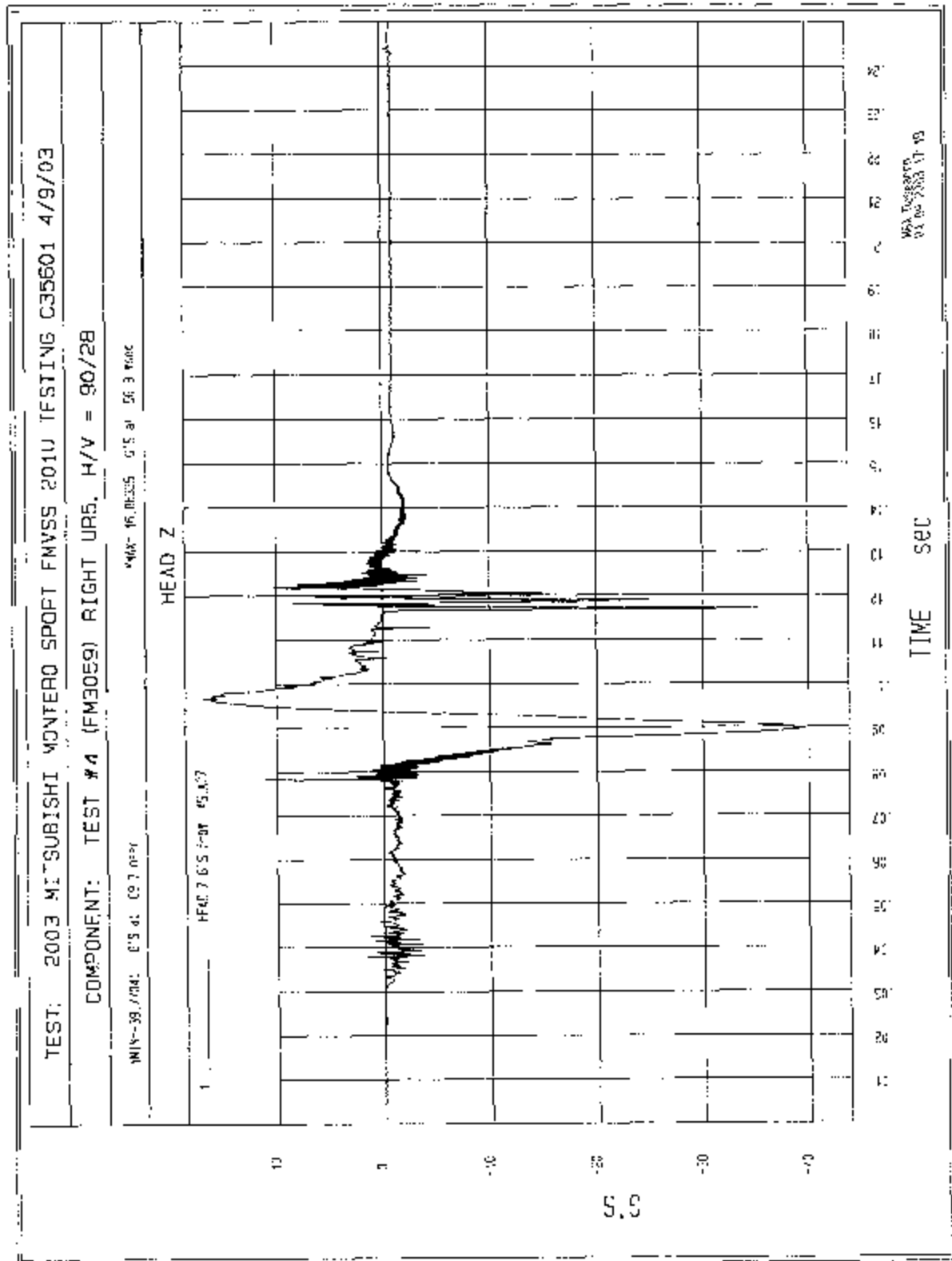
HEAD X (mm)

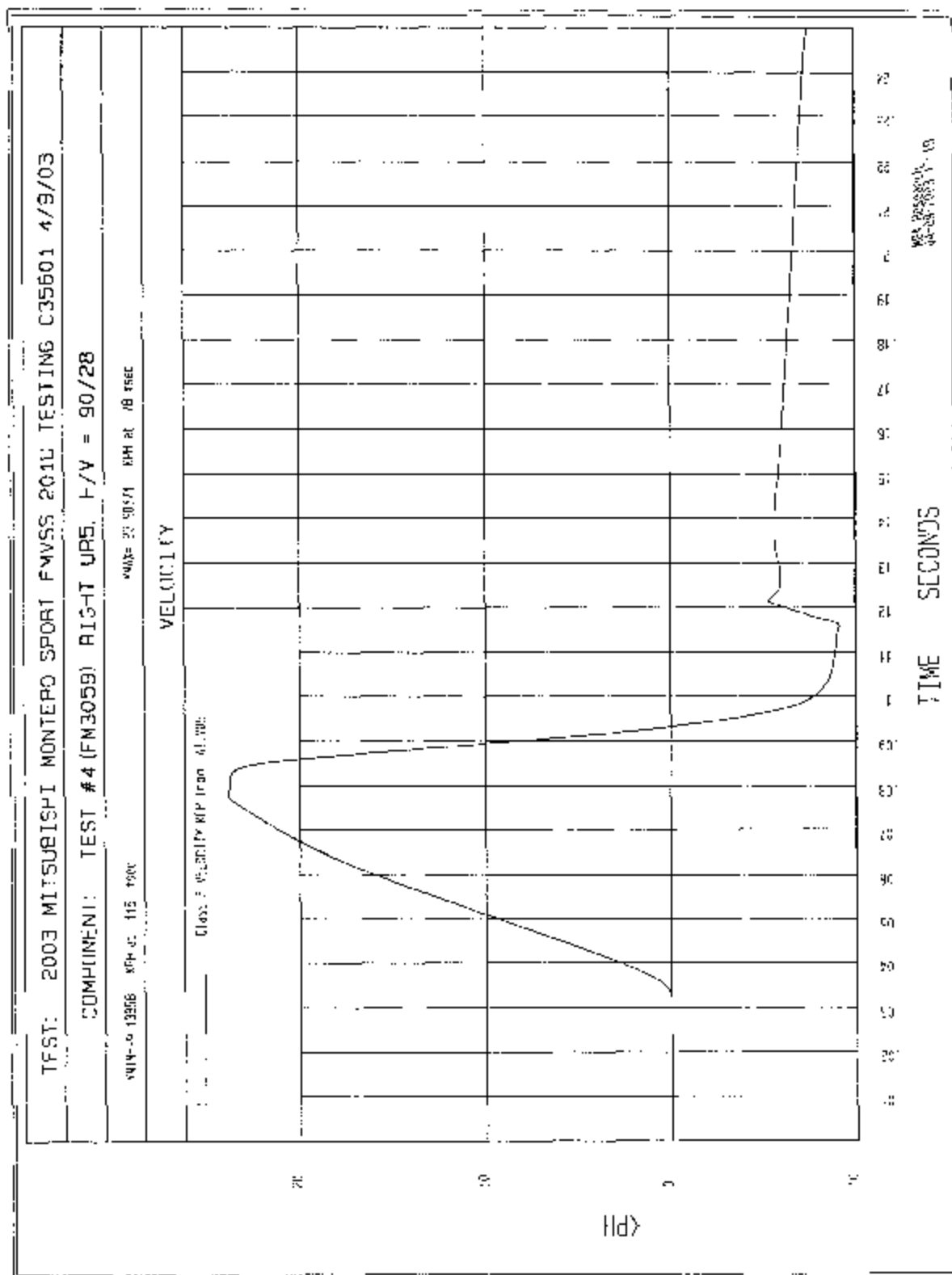












4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 66°F and 78°F (19°C - 26°C) is included in Appendix A.

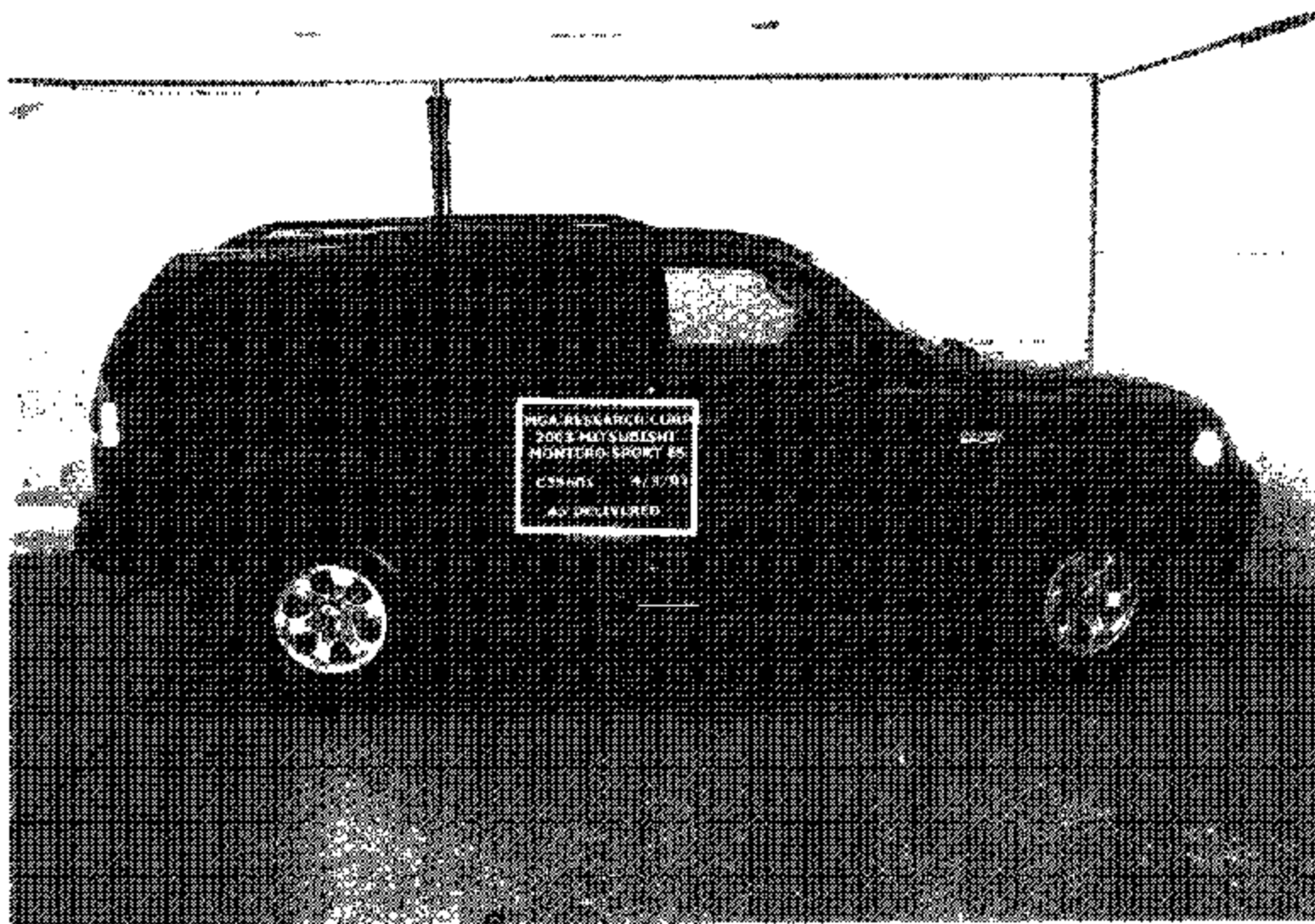
TABLE 4-1 LIST OF ITEMS USED

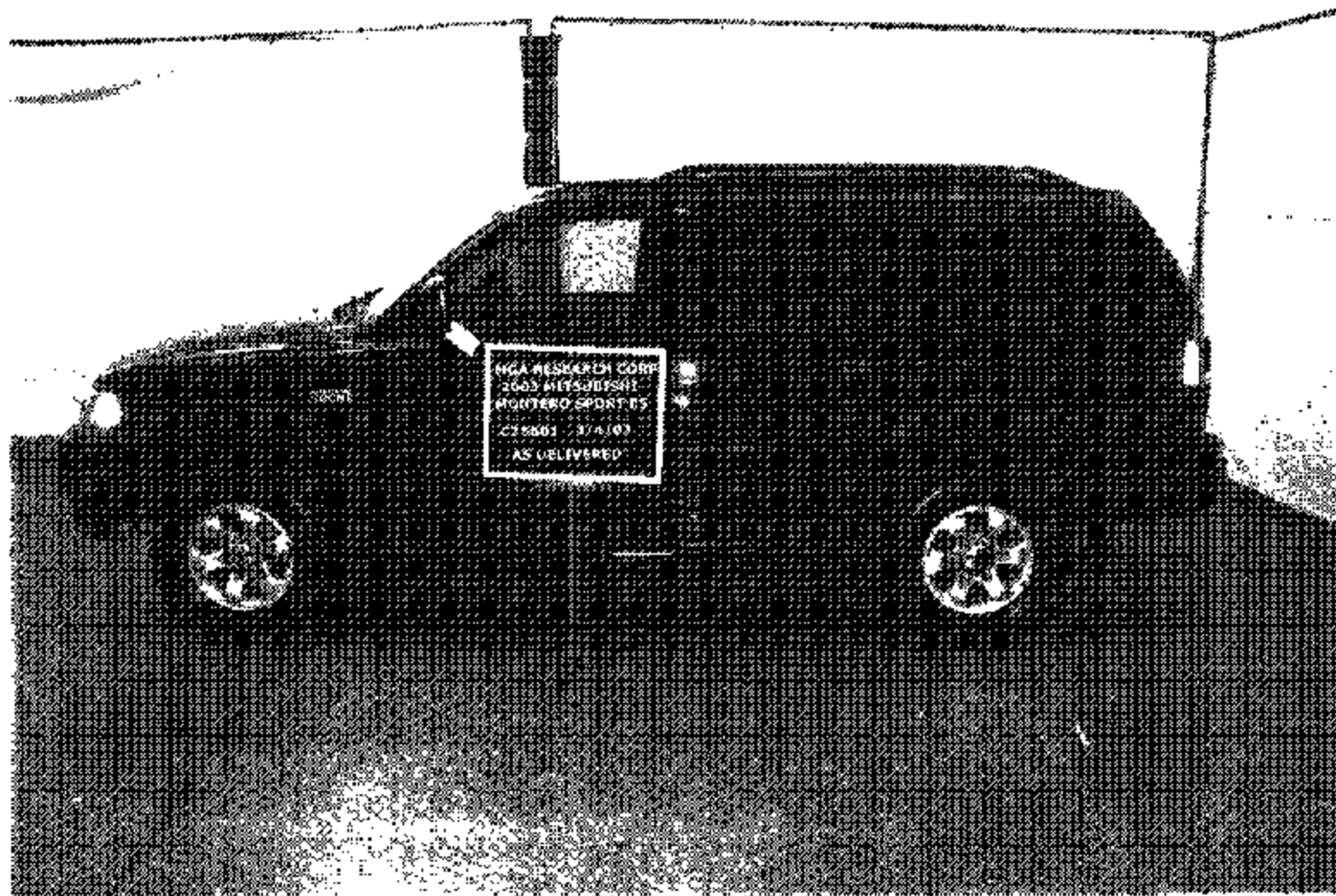
ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
Head Drop Tower (includes test frame and DAS)	MGA Research Corp.	MGA-100-DC	FMH Calibration	N/A	N/A
Accelerometers	Endevco	7264-2000	Acceleration Data	±0.5%	6 months
*Digital Inclinator	Macklanburg-Duncan	PRO 360	Set Angle of FMH/Targeting	0.1°	Annual
FMVSS 201U Test Frame (includes the propulsion control system, actuator, test frame, and DAS)	MGA Research Corp.	MGA-100-FMH	Test System	N/A	N/A
Free Motion Headforms	UTAMA UTAMA UTAMA	035 036 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Kodak	RO1000	Record Event	N/A	N/A
*FARO™	Faro Technologies	S08059801273	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Protractor	Stanley N/A Craftsman	33-215 -- --	Measurement Targeting FMH setup Horizontal Measurement	1 mm N/A 0.5°	Annual
*Vehicle Scale 9804-022/9805-175	Cardinal	8950F	Weighing Vehicle	± .5 kg	Annual
* Scale	Defecto	AP-20	Weigh FMH Head	± 0.01 lb	Annual
*Temperature Recorder	Dickson	TH8-24C	Record Temperature and Humidity	± 1°C ± 1% RH	Annual

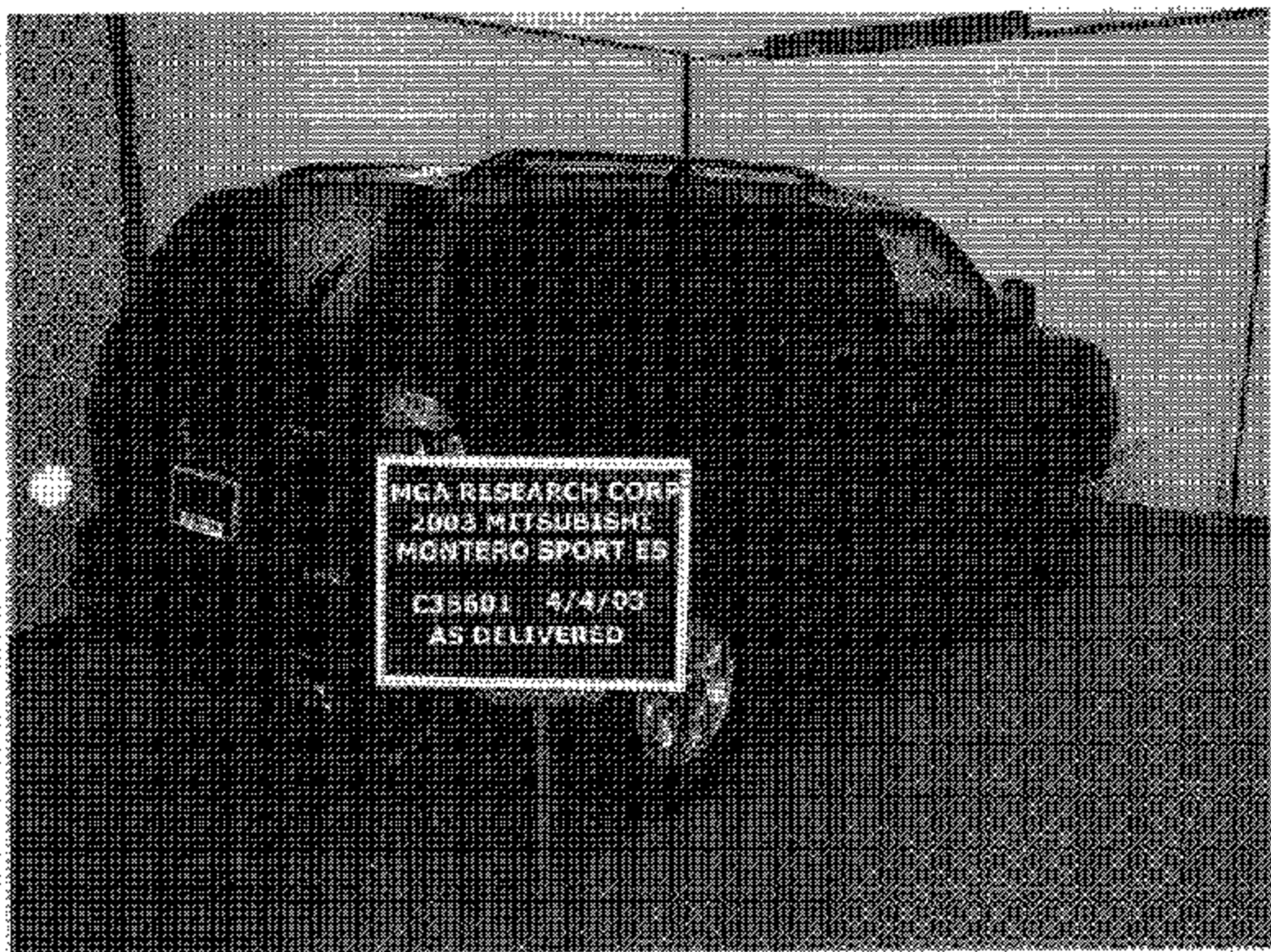
TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE

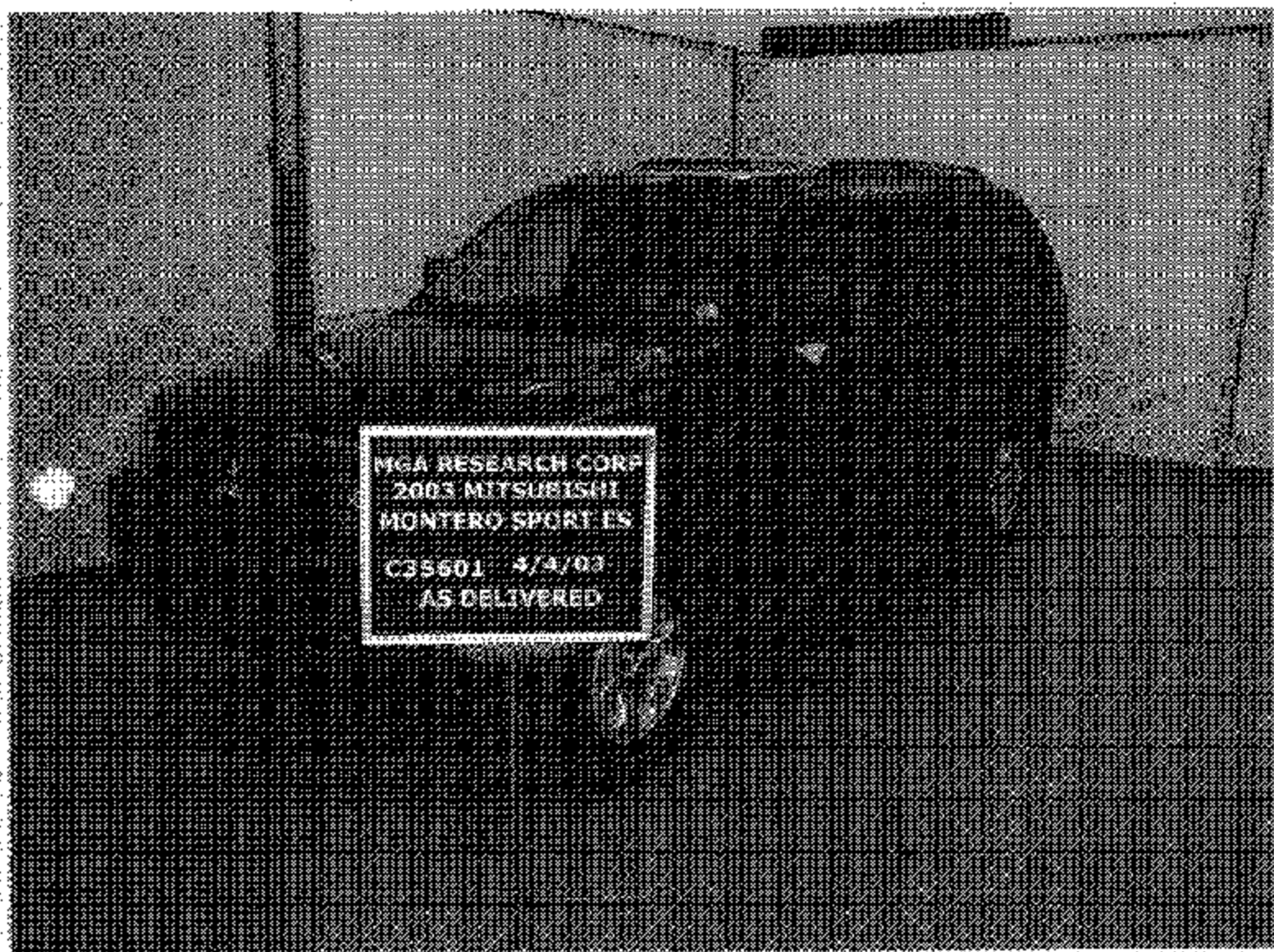
FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	21	19	248.0	11.9	Yes
Post	#35	10.02	24	22	246.2	2.0	Yes
Pre	#36	10.03	21	19	253.9	7.8	Yes
Post	#36	10.03	24	22	240.0	1.1	Yes
Pre	#38	9.99	21	19	254.4	3.5	Yes
Post	#38	9.99	24	22	247.1	3.9	Yes

Calibration certificates and headform calibration information can be found in the P572L Performance Calibration report which accompanies this report.









MAF D. BY MITSUBISHI MOTORS CORPORATION

JAPAN

GVWR 3350LBS/1430KG

SEP 2002

EXWR 2845LBS/1290KG WITH P235/75R15

105S TIRES

PR 15X6JJ RIMS AT 180KPa/26PSI

COLD

GVWR 3295LBS/1490KG WITH P235/75R15

105S TIRES

PR 15X6JJ RIMS AT 220KPa/32PSI

COLD

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND DEFECT
RECALL STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE



JA4M721H33J020485

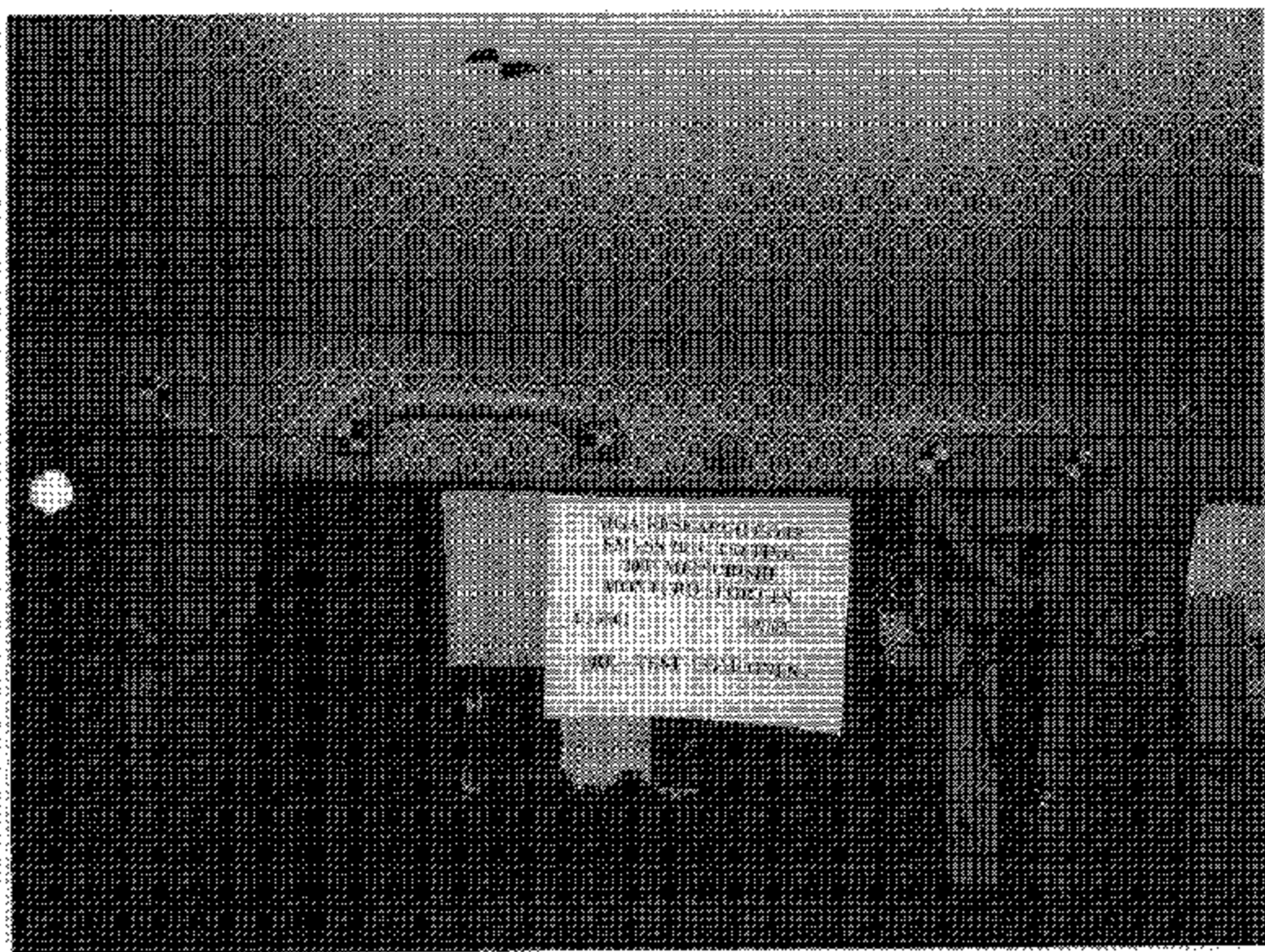
VEHICLE TYPE: MPV

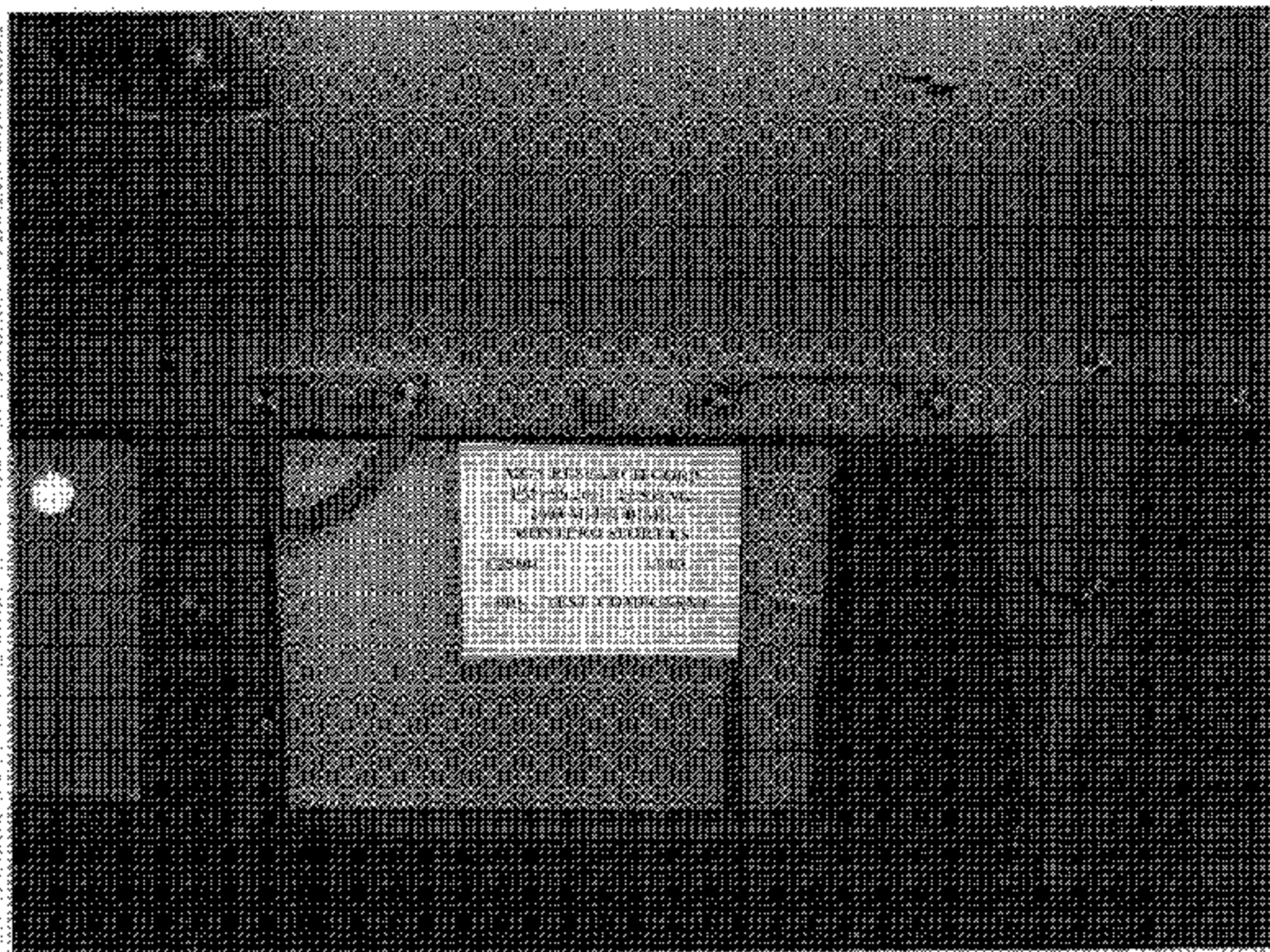
MU900360

TIRE SIZE		TIRE INFLATION PRESSURE ^{kPa} (^{PSI})	
		FRONT	REAR
P235/75R15 106S	(A)	180 (26)	180 (26)
	(B)	180 (26)	220 (32)
(A) TO 5 PASSENGERS			
(B) TO MAX. LOAD OR TRAILER TOWING			
PART NO. : M51412570 C			



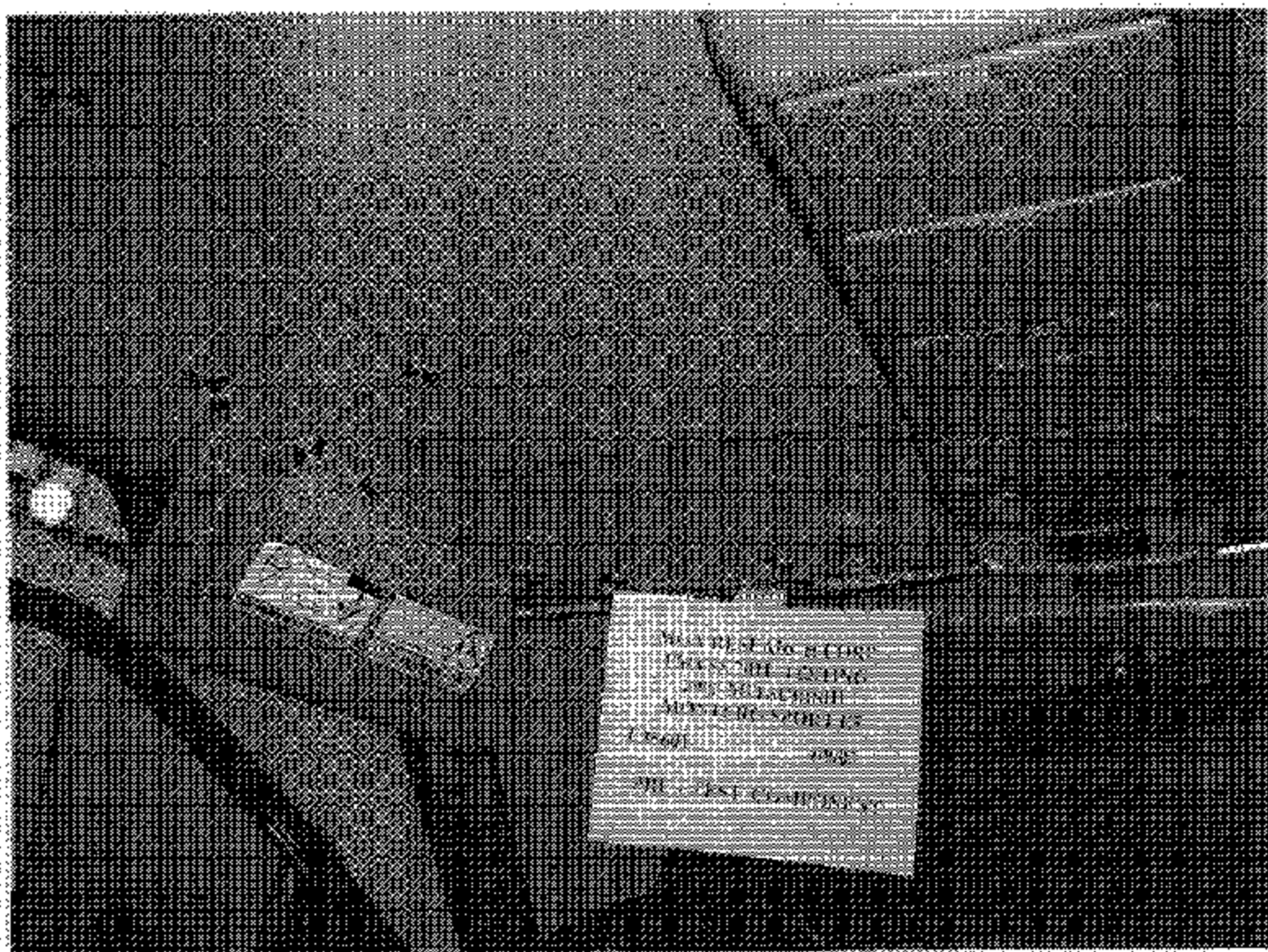
MC A RESLARC 24000
WAVE 2100 TESTING
100 MINS SUGAR
MONTRO SPORTE
C-1500 10000
TPE - 1500 COMMON



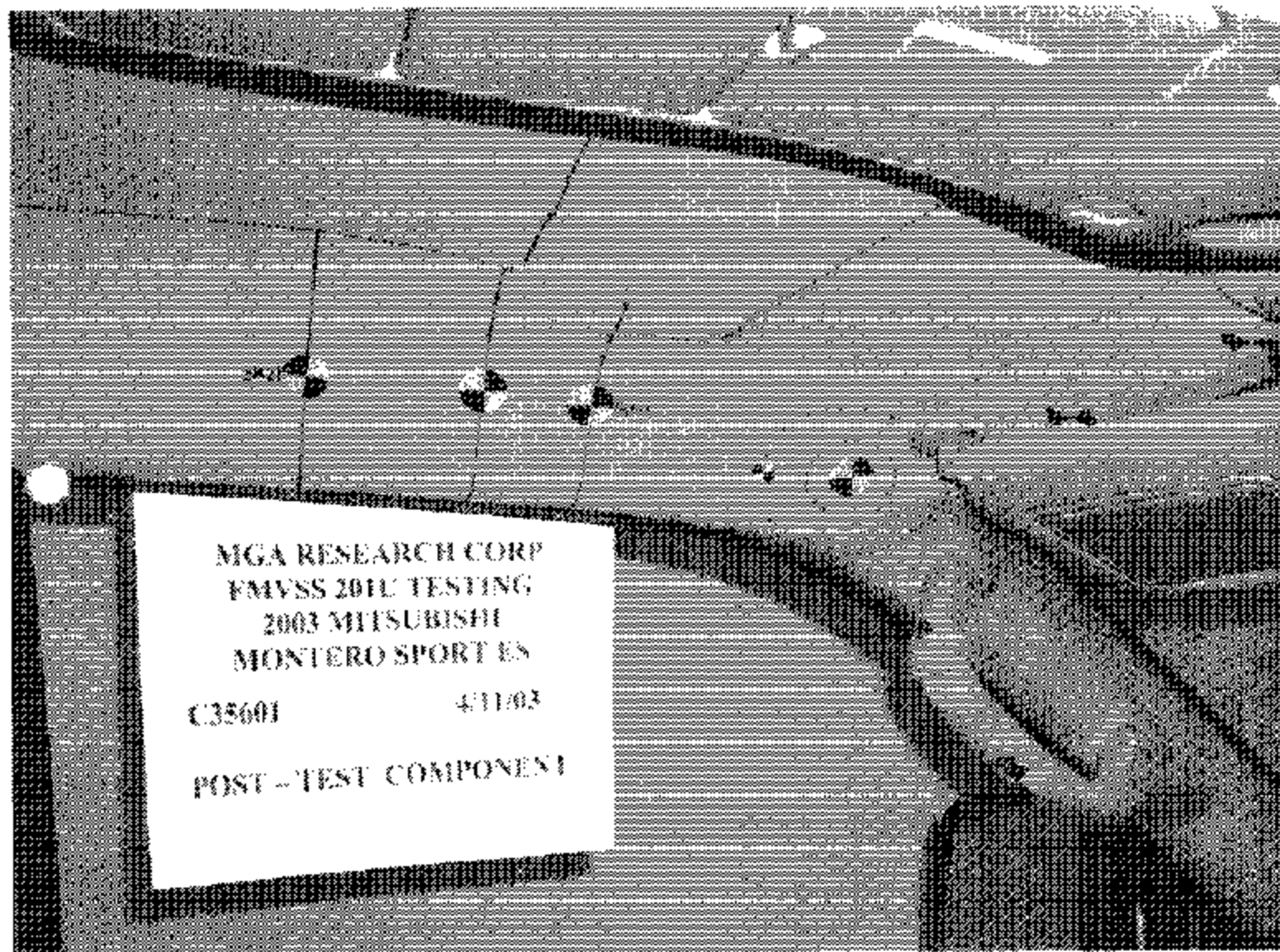


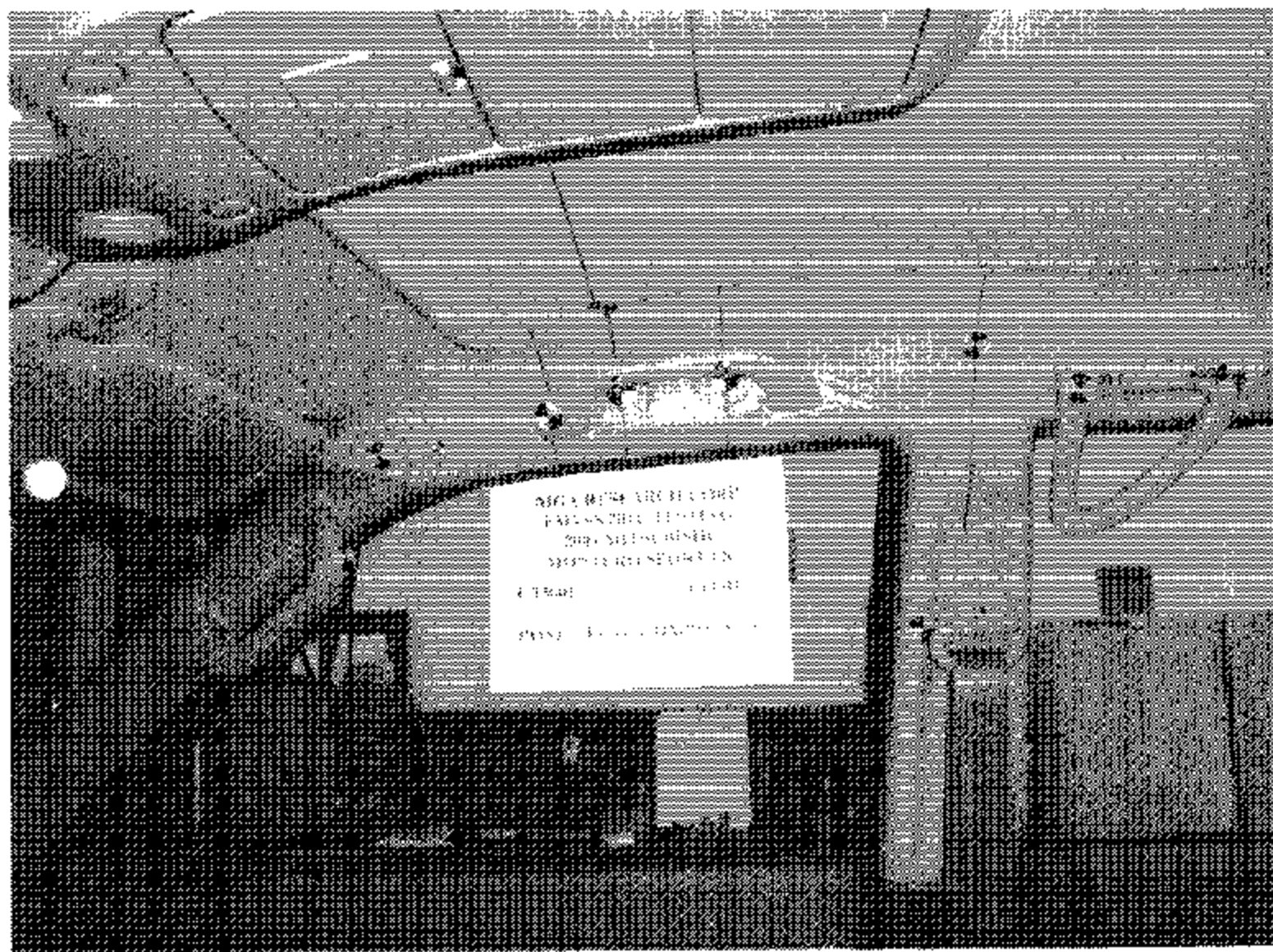
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DEPARTMENT OF JUSTICE
WASHINGTON, D.C. 20535
UNIT : 100-100000
DATE : 10-10-1960

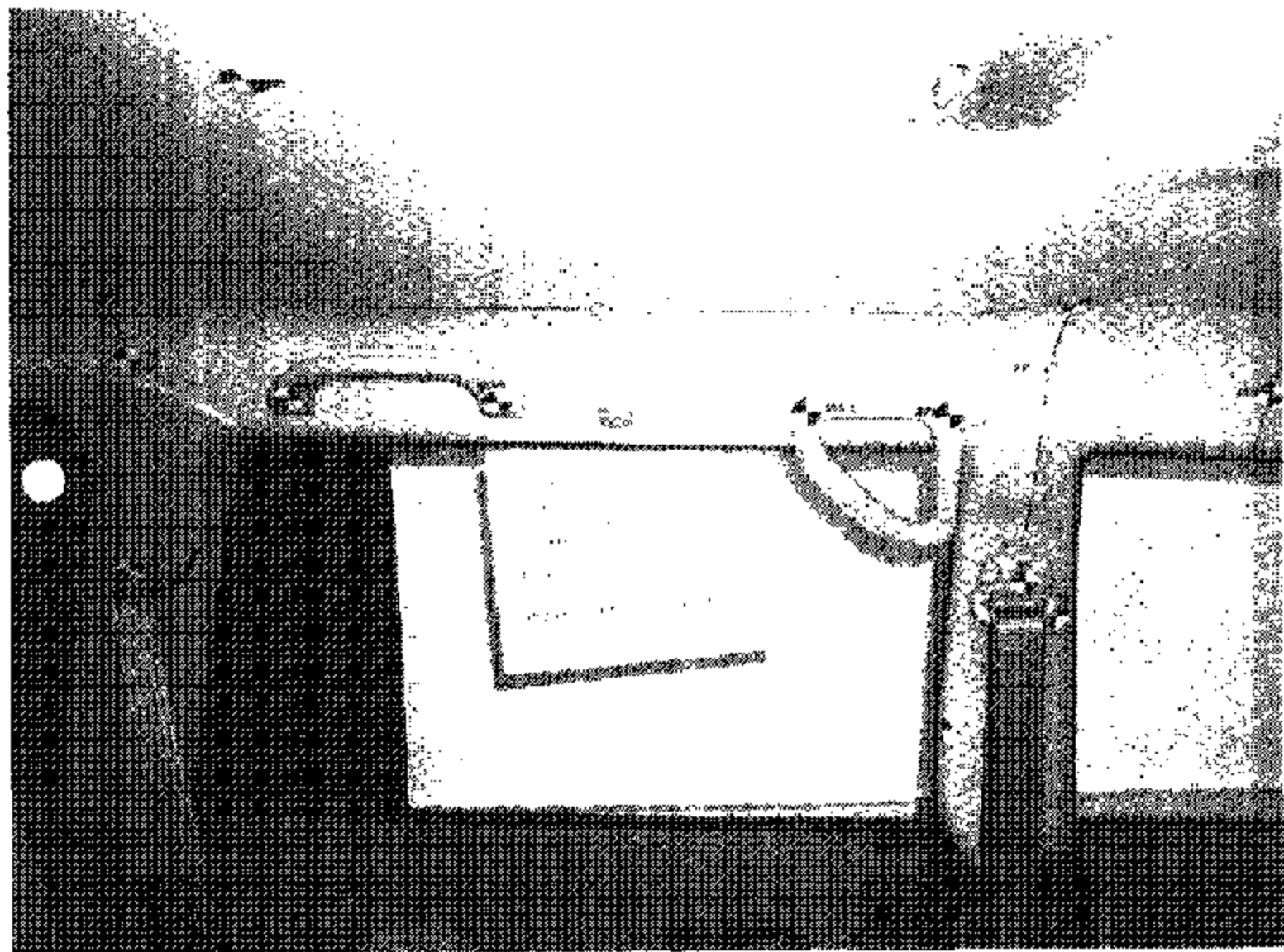
RECEIVED
FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
WASHINGTON, D.C. 20535
JAN 11 1964
FROM: SAC, NEW YORK
TO: DIRECTOR, FBI

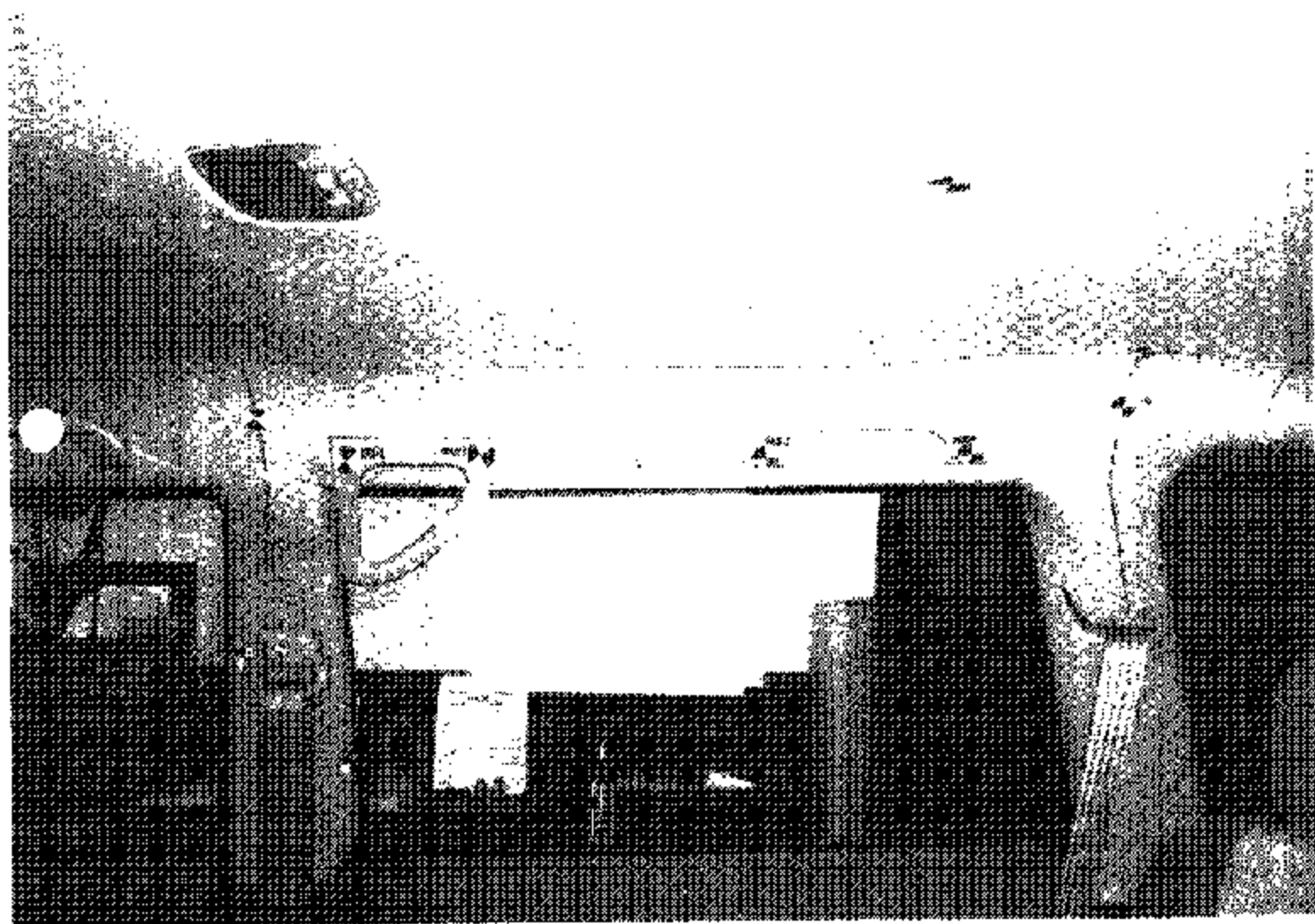


U.S. DEPARTMENT OF COMMERCE
BUREAU OF ECONOMIC ANALYSIS
WASHINGTON, D.C. 20540
OFFICE OF THE ASSISTANT SECRETARY
FOR ECONOMIC AFFAIRS
WASHINGTON, D.C. 20540

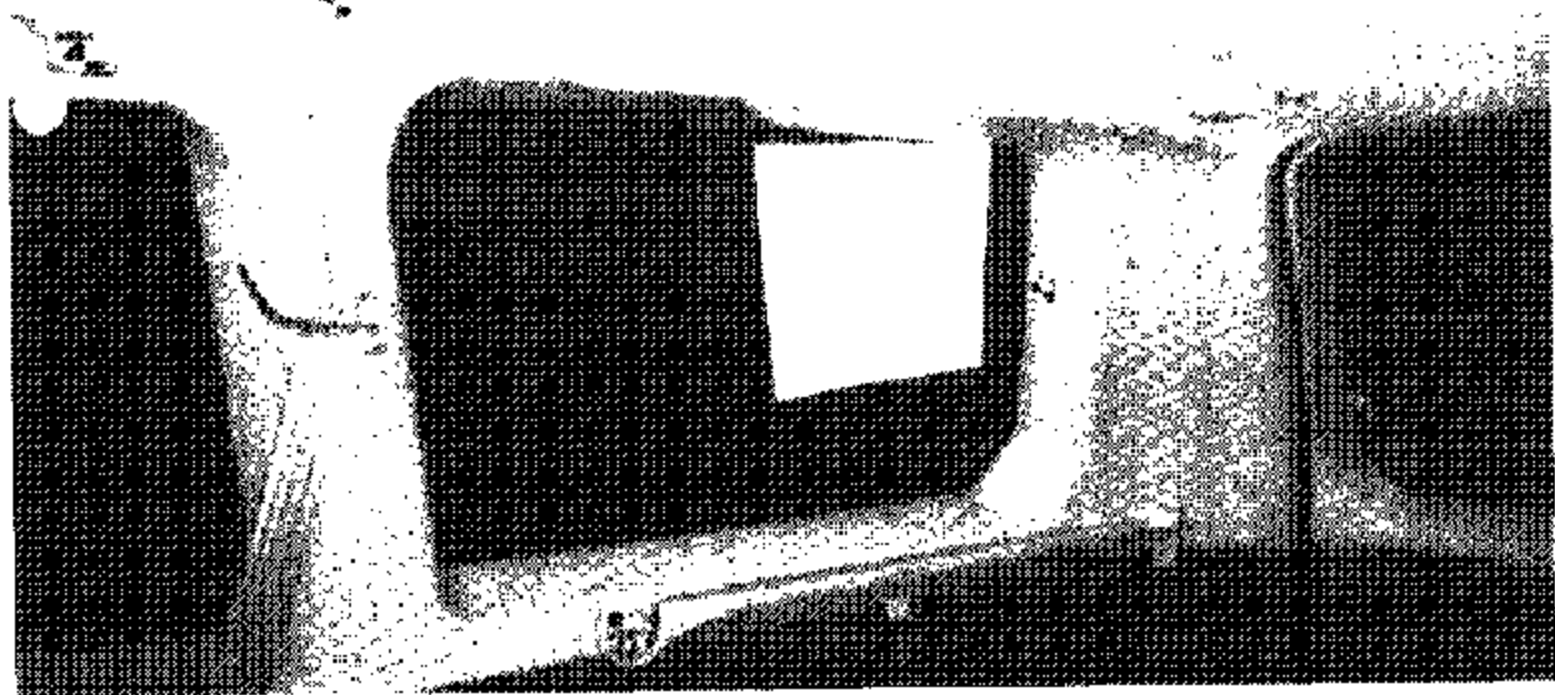








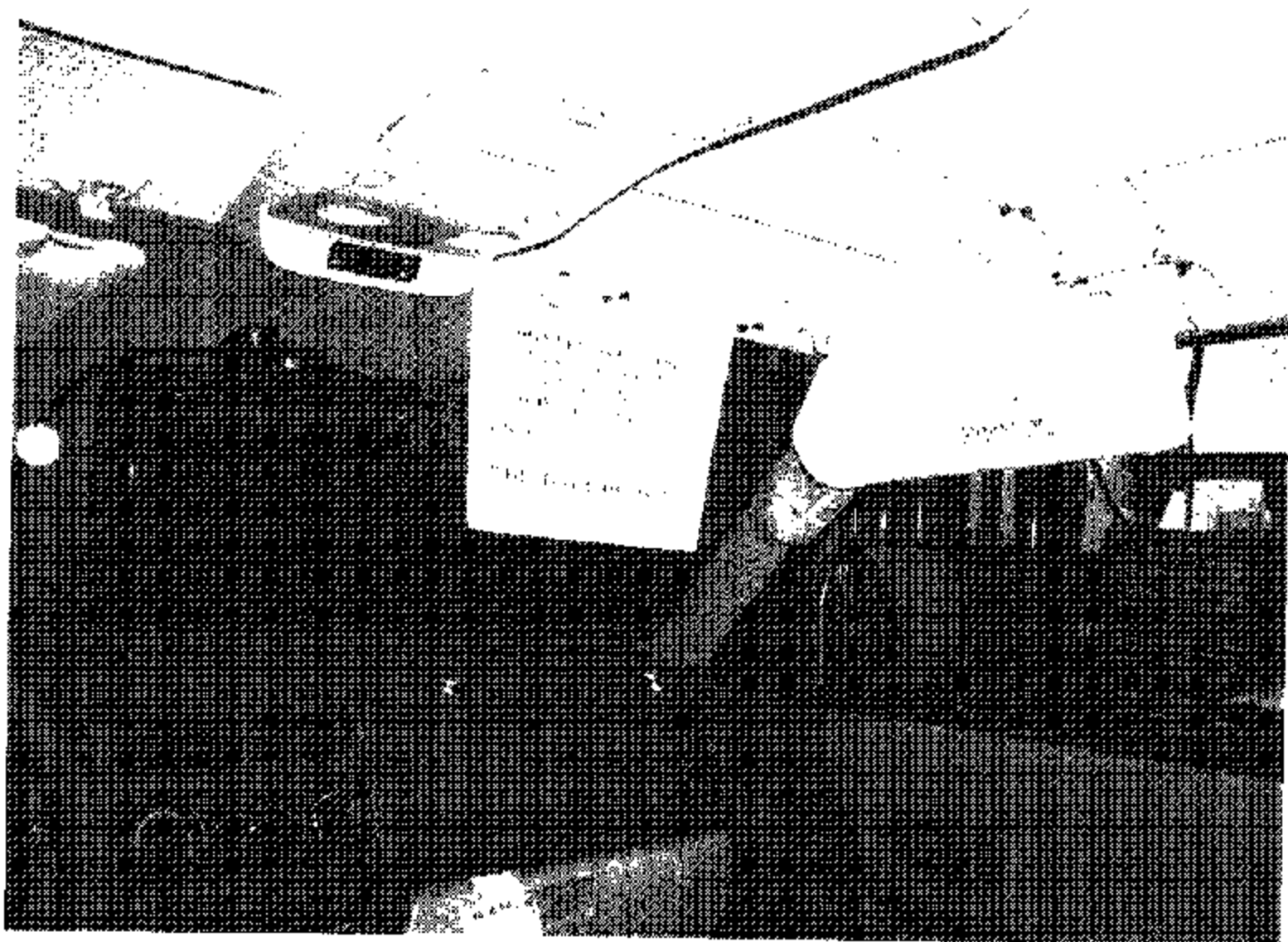


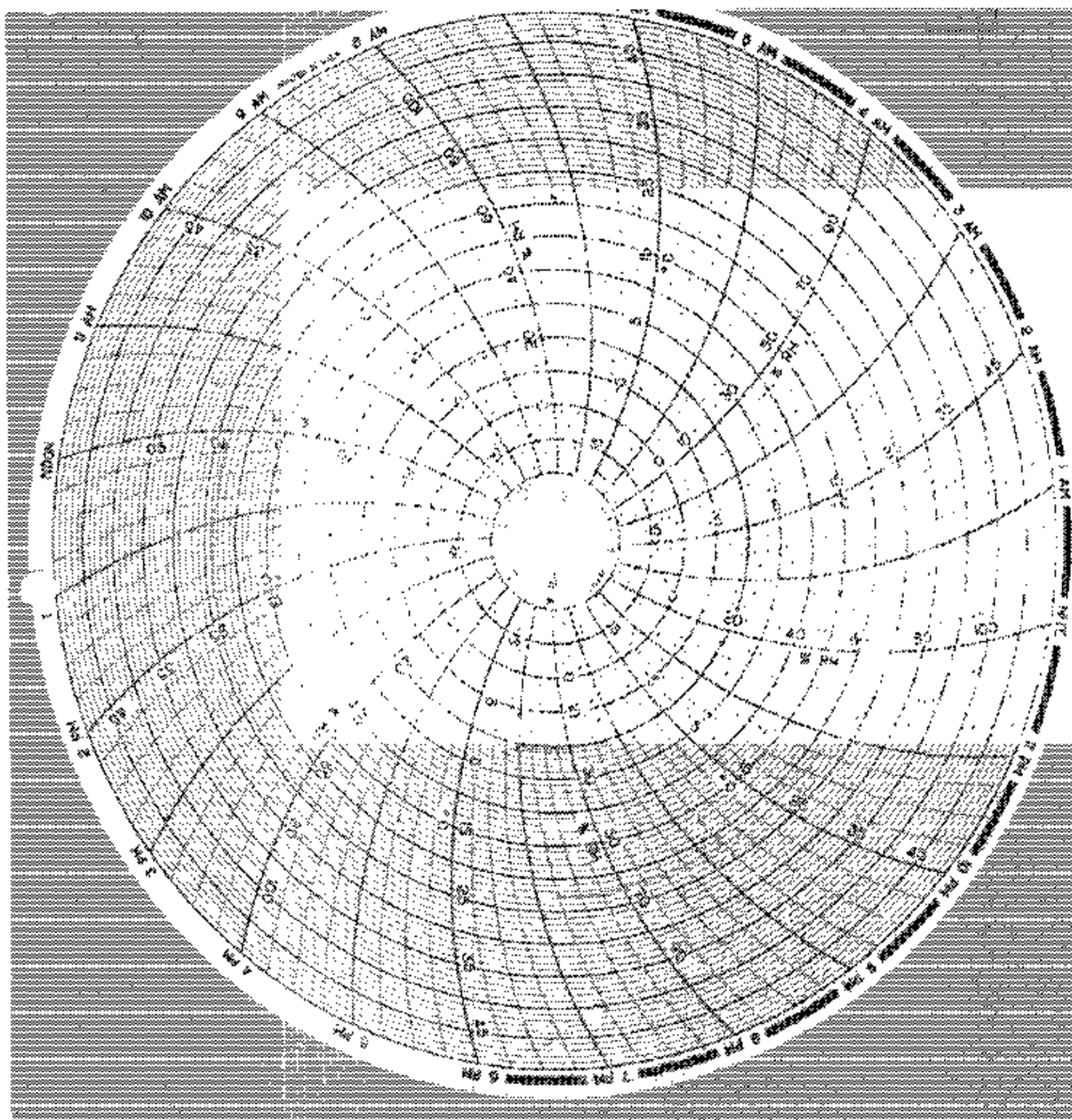


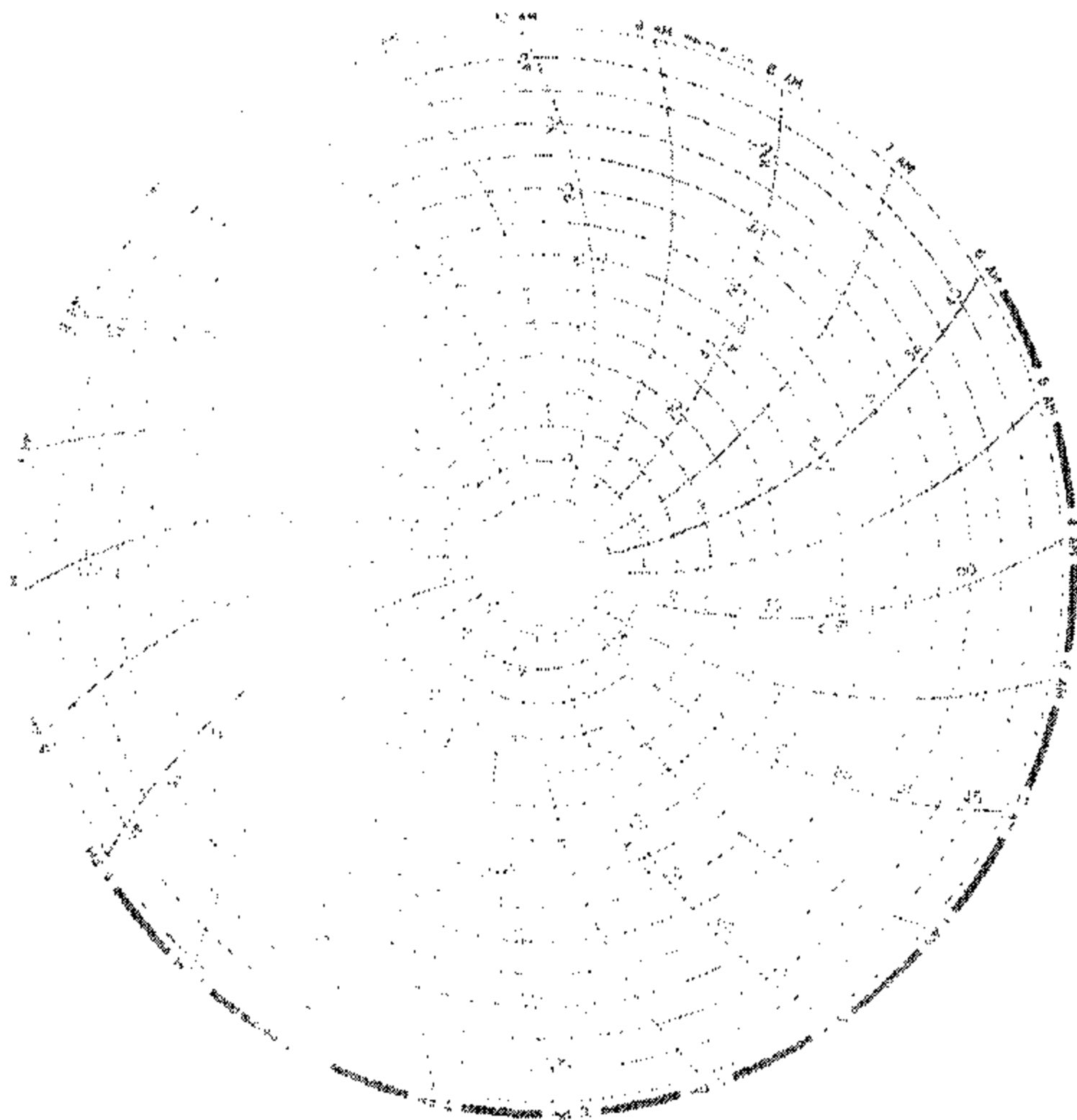
DCS RT-5000 TO GNP
CAISSA 2011-11-18
2001 M1000 (0001)
MON. 1000-0001

15000 41100

POST 1000-0001







4/10/03 C35601 DGG page 3 RED TEMPERATURE BLUE-HUMIDITY

